

IV. CANDIDATES RESUME

SUMMARY

DR. SUDIPTA SEAL JOINED THE ADVANCED MATERIALS PROCESSING AND ANALYSIS CENTER (AMPAC) AND MECHANICAL, MATERIALS AND AEROSPACE ENGINEERING (MMAE) IN 1997 FALL AFTER A POSTDOCTORAL TERM FROM LAWRENCE BERKELEY NATIONAL LABORATORY, UNIVERSITY OF CALIFORNIA-BERKELEY. HE RECEIVED HIS PH.D. FROM THE UNIVERSITY OF WISCONSIN (UWM), MS FROM THE UNIVERSITY OF SHEFFIELD, UK AND B-TECH (HONS) FROM INDIAN INSTITUTE OF TECHNOLOGY, KGP-INDIA. ALL OF HIS DEGREES ARE IN MATERIALS SCIENCE AND ENGINEERING, WITH A MINOR IN BIOCHEMISTRY AND SURFACE SCIENCE. SINCE 1998 FALL, DR. SEAL HAS BEEN CONSISTENTLY PRODUCTIVE IN RESEARCH, INSTRUCTION AND SERVICE TO THE UNIVERSITY OF CENTRAL FLORIDA (UCF). HE IS CURRENTLY SERVING AS THE NANOINITIATIVE COORDINATOR FOR UCF IN VICE PRESIDENT OF RESEARCH (DR. M. J. SOILEAU). HE IS THE RECIPIENT OF THE 2002: OFFICE OF NAVAL RESEARCH YOUNG INVESTIGATOR AWARD (ONR-YIP) – ONE OF 24 AWARDS IN THE COUNTRY AND ONE OF 2 IN MATERIALS SCIENCE AND ENGINEERING. HE CREATED THE FIRST STUDENT CHAPTER OF ELECTROCHEMICAL SOCIETY (A CENTURY OLD SOCIETY) AT UCF AND WENT DOWN TO THE ECS HISTORICAL ARCHIVES. HE IS PROMOTED TO FULL PROFESSOR IN 2005 (in less than 2 years after tenure) and WAS SELECTED FOR THE JAPAN SOCIETY OF PROMOTION OF SCIENCE AWARDEE AND ALEXANDER VON HUMBOLDT FELLOW.

Dr. Seal has garnered an excess of a significant amount of **research funding (in millions of dollar)**, as a PI and Co-PI in Fundamental and Application oriented research in Materials Engineering, Surface Engineering and Nanomaterials Technology, and Education related research projects. This includes grants from numerous National Science Foundation (NSF-DMR, DMI, CTS, ECE, INT, BES, EEC) and NSF REU site in Nanotechnology, NSF NUE (Nanotechnology Undergraduate Education), NER (Nanoscale Exploratory Research) program, SBIR-DOD, DOE (multiple), BMDO Phase I, NASA SBIR Phase I and II (all with Plasma Process), NASA-Glenn, FSEC, NIH, DOD-MDA, DURIP and the Office of Naval Research: Young Investigator Award-2002 (ONR-YIP). He has also obtained numerous industry funding from in and outside of the State of Florida, such as, Siemens Westinghouse, PsiloQuest, Plasma Process, US Filter, Disney, Bionucleonics, Whirlpool, Constellation Tech., Whirlpool, PPG Industries, Lockheed Martin, MD Anderson Cancer Center, Praxair, Nelson Engineering, Ortheon Medical, Materials Interface, et al.

In Materials Processing, Dr. Seal has pioneered within the area of combined solgel-microemulsion-wet chemical-plasma based surface modified regenerative nanostructured materials from coating to free standing powders for various applications in sensors, bulk components, broad band optical coatings, nanobiotechnology and functional coatings for extreme environments.

Dr. Seal has recently **published encyclopedia nanotechnology chapters and books** on Nanoscience and Nanotechnology, Sensor and Sensor Materials, First in Nanoscience by American Scientific Press, and various other book chapters on surface science and functional nanomaterials. By distinction, all of his research is published in peer-reviewed journals and proceedings and exceeds 220 in number. Recently he has published books on Nanoscale Science and Engineering Education (first of its kind, by American Scientific Press), Structural Nanomaterials – Text Book (from Cambridge University Press: Koch, Seal, Veprek and Ovidko), and Functional Nanostructures (Springer-Verlag). Dr. Seal has contributed length review chapters in materials science and nanotechnology in prestigious journals such as, Progress in Materials Science, Materials Science and Engineering Reports, International Materials Review, Nanoletters, Applied Physics Letters, NATURE Nanotechnology. Dr. Seal's research has been cited in many websites including New York Times. His research has led to 16 patent disclosures, a remarkable achievement in a short period of stay at UCF.

Dr. Seal's research has won him the accolade of UCF's **College of Engineering and Department Researcher of the Year in 2000, 2004** subsequently at the Assistant and Associate Professor level. He has been honored with the Department and College Level Excellence in Graduate Teaching Award in 2002 and won the Research Incentive Award in 2002. He won the prestigious Office of Naval Research Young Investigator Award (ONR-YIP), 2002 and was selected for the ASM-IIM Lecturer Award of the Year, 2003. In 2004, he received the prestigious, Japan Society of Promotion of Science Award (JSPS) at NIMS- Japan and has been invited to visit AIST-Nagoya, Tokyo University and Tokyo Institute of Technology (TIT). In 2004 he was part of the Nanotechnology Expert Team to the Hong Kong Government and part of the Electrochemical Society

IV. CANDIDATES RESUME

Nanotechnology Task Force. In 2005, he has been selected to receive a GOLD award (Graduate Alumni of the Decade) from his Ph.D institution in Wisconsin. In 2005, Seal was selected to receive the Alexander Von Humboldt Fellowship from Germany. In 2006, he has been nominated for SURA (Southeastern University Research Association) Research Distinguished Scientist (one/institution) award from UCF.

Dr. Seal was one of the **principal authors** of the UCF MS and Ph.D. degree program in Materials Science and Engineering in Mechanical Materials and Aerospace engineering approved by Board of Regents. It should be noted that UCF is the 2nd University in the state of Florida to offer this degree program. This is considered a great achievement, professionally, and for the department. Additionally, he was funded by NSF to start a Campus wide Interdisciplinary Nanotechnology Undergraduate Education program (with 38 campus faculty) at UCF – one of 29 schools to receive such an award. The proposal received the “Herd of Cats” award by Office of Research-UCF. Dr. Seal is instrumental in initiating a graduate portfolio in nanoscience and technology through Nanoscience and Technology Center.

Dr. Seal is an excellent educator who takes **special interest in inspiring students**. He has already graduated 14 MS and 7 Ph.D. students and advised 4 postdoctoral fellows. He is currently instructing 9 Ph.D., 1 MS, 5 BS students and 2 Postdoctoral fellows. The majority of his students received honorable recognition through their research presentation from all over the globe. In his NSF funded REU program Dr. Seal has recruited and graduate 32 students from all over USA including top schools (such as: UIUC, UC-BERKELEY, U MINNESOTA, U FLORIDA, U Santa Barbara, Princeton, etc.) including minority, women, African American, Hispanic and K-12 students, thus balancing the student demographics.

Many of **Dr. Seal's students have won prestigious awards** such as (1) Marcel Pourbaix award, (2) International Metallographic Contest, (3) AVS Student Poster award, (4) Hitachi Grand Winner, (5) Dorothy Hoffman award from AVS, (6) NSF fellowships, (7) AVS Graduate Research Award, (8) PNNL Summer fellow, (9) several student travel and best paper grant from ECS, AVS, ASM, and TMS, and (10) Electrochemical Society Overall Student Poster award.

Due to Dr. Seal's **reputation in the nanotechnology arena**, he is currently on the Editorial Board of Journal of Nanoscience and Nanotechnology, Reviews in Advanced Materials, Sensor Letters and JOM. In the September issue of JOM 2001-2007, he achieved the prestige of serving as guest editor in the field of *Surface Engineering and Nanotechnology*. All issues were devoted to Nanomaterials. He is also been invited to serve as guest editor for the MRS Bulletin 2004, in the Application of Nanoceramics. He is also serving on the Board of Review on the Journal of Metallurgical Transactions and has been selected as an Associate Editor for Vac Sci and Technology (JVST) - 2004. Based on his scholastic ability he is been elected as the Nanoinitiative Coordinator and worked with the Vice President of the UCF Office of Research. He was recently invited to the prestigious *National Nanotechnology Initiative Grand Challenge Workshop* sponsored by NASA and Office of Science and Technology – Washington, DC to give a talk on nanotechnology in the sensor arena. Besides, he is part of the TMS *Surface Engineering and Nanomaterials and ECS nanotechnology* task force. In 2004, he served as a guest editor for MRS 2004 Nanoceramics Bulletin (only by invitation). In 2004, he was selected in the USA nanotechnology expert team by University Grant Commission to review nanotechnology programs at Hong Kong. Frequently Dr. Seal is invited by National Science Foundation to serve as a panel member in materials science and nanotechnology and regularly delivers workshops and short courses in ASM/TMS, ECS and AVS – professional scientific societies.

Dr. Seal also has **the great honor to serve on various organizing boards** of ECS, AVS, MRS, ASM and TMS conferences. Recently, he is been selected to serve on the ASM technical programming board. In 2002, he led the Nanotechnology symposium in ECS CENTENNIAL MEETING in Philadelphia, 2002 and now serving on the ECS nanotechnology board since 2002. He has also contributed greatly to Department, College and University Services. He served as an active member of UCF's Research Council, Research Incentive Program Award Committee, UCF travel committee and various faculty selection committees including the Nanodirector search and the UCF Nanocommission.

Dr. Seal is regularly involved in **public service** including training of high school students in research. Students under his supervision have won State and National level awards. Recently, one of the high school students co-authored a paper in Nanotubes and published in *Journal of Applied Physics and Review of Scientific Instrumentation*. Besides, Seal has directed many high school teachers under the NSF REU/RET grant and created nanotechnology curriculum in K-12 schools.

IV. CANDIDATES RESUME

Dr. Seal has **initiated valuable collaborations** with International Universities and Institutions (including the University of Warsaw, the Foundry Research Institute, Poland, the University of New South Wales, the University of Queensland, Australia), Bordeaux (France), Indian Institute of Technology, Saha Institute, University of Pune (India), University of Groningen (Netherlands), St. Petersburg (Russia), Imperial College of Science and Technology and Medicine (UK), National Institute of Materials Science (NIMS), Asian Institute of Science and Technology (AIST), RWTH-Aachen (Germany), U of Munich (Germany), Tokyo University and Tokyo Institute of Technology (TIT) – (Japan) and created international prominence for UCF.

IV. CANDIDATES RESUME

UNIVERSITY INSTRUCTION

INTERESTS AND PLANS

- Quality instruction of several basic and advanced courses in materials engineering and related areas at the undergraduate and graduate level
- Participation in collaborative efforts in teaching
- Advising and recruiting undergraduate and graduate students
- Attain excellence in teaching
- Develop, operate and maintain appropriate teaching laboratories
- Participation in university/industry partnerships and professional service

My teaching interests are closely connected with my research field. I am confident that I can offer basic courses in materials science and engineering for both undergraduate and graduate students. Special courses on Modern X-ray Technology, X-ray Analytical Techniques, Surface Physics and Chemistry, Nanotechnology and Nanostructured Materials could be ideally combined with my research interests.

In my current position I have found seminars and practical exercises for students to be a very important part of training and instructing. I often conduct industrial tours and schedule guest speakers. These events are also important for the instructor as a source of information derived from feedback from students. I am confident that I can contribute with both my knowledge and my interests to improving on-line and interactive courses.

NEW COURSES DEVELOPED AT UCF

- XPS and AES
- Kinetics
- Surface Science for Engineers
- Introduction to Nanotechnology
- Nanomaterials Process Engineering
- Nanomaterials Characterization
- Nanotechnology Undergraduate Curriculum under the NSF NUE grant

All courses are based on module development allowing utilization within related courses.

OTHER COURSES INSTRUCTED

Graduate Instruction

- Thermodynamics: Materials Science
- Deformation and Fracture
- Phase Transformation
- Corrosion Science and Engineering
- Surface Science

Undergraduate Instruction

- Structure and Properties of Materials
- Mechanical Engineering Thermodynamics
- Introduction to Materials
- Structure and Properties of Materials
- Experimental Materials Science

Other Courses of Interest

- Transport Phenomenon
- Diffusion
- Physical Metallurgy
- Modern Characterization Techniques
- Failure

I V . C A N D I D A T E S R E S U M E

A W A R D S

- Excellence in Graduate Teaching, Mechanical, Materials and Aerospace Eng. 2002
- Graduate Teaching Excellence, College of Engineering and Computer Science 2002
- Herd of Cats award from Office of Research – NSF NUE grant
- UCF Teaching Incentive Program award - TIP

F U N D I N G

- REU Site in Nanomaterials Processing and Characterization, NSF 2002 – 2005
- REU Site in Functional Nanostructures, NSF 2005 - 2008
- RET supplement for Teachers in Nanotechnology, NSF 2002 – 2006
- NUE: Nano undergraduate research and curriculum development, NSF 2003 – 2004

IV. CANDIDATES RESUME

INDEX

- EDUCATION
- EMPLOYMENT
 - Academic
 - Visiting/Invited
 - Academic/Research - Research Interests
 - Industrial
- FUNDED RESEARCH & PROJECTS
- INSTRUCTION EXPERIENCE, INTEREST and PLANS
 - Graduate Instruction
 - Undergraduate Instruction
 - Interest And Plans
- STUDENT SUPERVISION
 - Post Doctoral Fellow Supervision
 - Ph.D. Supervision
 - Masters Supervision
 - Undergraduate Project Supervision
 - Student Placement
- HONORS
 - Student Honors
- PROFESSIONAL ASSOCIATIONS
- WORKSHOPS
- TECHNICAL EXPERIENCE
 - Technical Reviewing
 - Patents/Applications
 - Proposal Reviewing And Panelists For Federal Agencies
 - Conference Organizer and Chairman
 - Short Course Instruction
- ADMINISTRATIVE SERVICE AT UCF
 - University Level
 - Department Level
- ADMINISTRATIVE SERVICE and OFFICE HELD AT TECHNICAL SOCIETIES
- COMMUNITY SERVICE
- COLLABORATORS
- STUDENT RELATED ACTIVITIES

IV. CANDIDATES RESUME

EDUCATION

- 1996-1997** **Postdoc, Advanced Light Source, Lawrence Berkeley National Laboratory (LBNL)**
University of California-Berkeley, CA, USA
Research: Submicron Spectromicroscopy using soft x-rays
Focus: **Emphasis in** developing a Scanning Photoemission and Transmission Microscope using zone plate optics, performing 0.2 micron insitu ESCA or NEXAFS Spectromicroscopy on metals, alloys and polymers in wet and dry conditions
Supervisors: Dr. T. Warwick and Dr. H. Padmore (Berkeley)
- 1993-1996** **Ph.D., Materials Science and Engineering**
University of Wisconsin, Milwaukee (UWM), USA
Dissertation: Studies in the Surface chemistry of the Interaction of Pathogenic silicates with Biocells
Courses: **Emphasis in** advanced materials engineering courses, surface, solid state physics and chemistry, electronic materials. Novel first of its kind, program in biochemistry and biochemical research techniques
Minor: Biochemistry discipline and Surface Chemistry
Supervisors: Prof. Tery Barr, Co-Advisor: Prof. David Petering (UWM)
- 1991-1992** **MMet., School of Engineering, Materials**
University of Sheffield, United Kingdom.
Thesis: Thermomechanical processing of Ti based Interstitial Free steels
Courses: **Emphasis in** advanced metallurgy and materials, scanning and transmission electron microscopy, polymers, metallic glasses, magnetic materials, solidification and project management
Supervisors: Prof. C. M. Sellars (Mike) and Co-Advisor: Dr. Whiteman
- 1986-1990** **B-Tech., Metallurgical and Materials Science and Engineering (Hons)**
Indian Institute of Tech-Kharagpur, (IIT-KGP), India
Thesis: Effect of superficial cerium oxide coating on austenitic grade stainless steels
Courses: **Emphasis in** Thermodynamics, kinetics, casting, electrochemistry, electronic materials, process and powder metallurgy, corrosion, computers, electronics and mathematical modeling
Supervisor: Prof. Subir Bose and Prof. Sanat Roy

IV. CANDIDATES RESUME

EMPLOYMENT

ACADEMIC

- Jul 2004 - Present **Coordinator, UCF Nanotechnology Center**, University of Central Florida
- Jul 2003 **Associate Member, Biomolecular Science Center**, University of Central Florida
- Sep 2001 - Present **Co-Chair, Nanocommission**, University of Central Florida
- Sep 2001 - 2004 **Nanoinitiative Coordinator**, University of Central Florida
Working with MJ Soileau to co-ordinate the 4.5 million dollar state initiative for nanoresearch in Office of Research
- May 2005 - Present **Professor**, University of Central Florida
- May 2002 - 2004 **Associate Professor**, University of Central Florida
Instruction, research and student supervision at undergraduate and graduate level
- Aug 1997 - Apr 02 **Assistant Professor**, University of Central Florida
Instruction, research and student supervision at undergraduate and graduate level
- Sep 1996 - Jul 97 **Post Doctoral Fellow**, Lawrence Berkeley Nat'l Laboratory, Univ. of CA, Berkeley
Research in Spectromicroscopy and its application to material science problems at Advanced Light Source

VISITING / INVITED FACULTY EXPERIENCE

- May – 2006 Visiting Professor, RWTH-Aachen, Germany – Alexander Von Humboldt Fellow Award
- Feb - Mar 2000 **Visiting JSPS Faculty Fellow**, Nat'l Institute for Materials Science (NIMS), Japan
Host: S. Kuroda – NIMS
Prof. S. Kuroda – Coatings group – NIMS Sengen site, Tsukuba
Prof. D. Goldberg and Y. Bando – NIMS ICYS Center, Tsukuba
Prof – AIST, Tsukuba
Prof. K. Hone (Acta Met Editor), NIMS, Tsukuba
Prof. M. Yoshimura – Tokyo Institute of Technology, Tokyo
Prof. H. Murakami – University of Tokyo, Tokyo
Prof. N. Murayama – ASIT – Nagoya and University of Nagoya, Nagoya
- Jan 2004 **Visiting US Nano Expert Team**, (1 week), invited by Hong Kong UGC and Govt.
Host: UGC, to review 100 million nanoproposals and site visits
- Dec 2003 **Visiting Distinguished Lecturer**, Indian Institutions and Universities
Host: ASM – USA and IIM-India Lecture Award: Bombay, Pune and Bengal IIM chapter
Prof. S. Malhotre – IIT Bombay
Prof. M. Totlani – BARC - Bombay
Prof. S. K. Date – University of Pune – Pune
Dr. Pradip – Tata Consultancy Service – Pune
Prof. S. Krishnarajan – National Chemical Laboratories – Pune
Prof. S. K. Roy – IIT Kharagpur
- May - June 2001 **Visiting Faculty**, University of Queensland, Brisbane, Australia
Prof. I. Gentle: Research Discussion: Surface Engineering, Molecular Imprinting and with Dr. B. Wood – ESCA and SIMS experiments
Prof. M. Trau – Nanomaterials in Biology
Prof. M. Lu – Nanomac Center and Functional Nanomaterials
Prof. J. Drennon – Center for Microscopy
Prof. S. Bhatia – Chemical Processes
- June 2001 **Visiting Faculty**, University of New South Wales, Sidney, Australia

IV. CANDIDATES RESUME

Host: Prof. S. Bandopadhyaya: Research Discussion in Nanomaterials
Prof. A. Wu - Nanomaterials
Prof. and Chair R. Lam - Surface Science

- June 2001 **Visiting Faculty**, (1 week), University of Wollongong, Australia
Host: Prof. T. Chandra: Research Discussion in Thermomechanical and Advanced Materials Processing

ACADEMIC / RESEARCH

RESEARCH INTERESTS (From 1988 – Till Date)

Materials Processing (Nano/Micro, Thin films, Bulk Nanomanufacturing, Nanobiotechnology)

- Plasma spraying of coatings and components (nano to micro scale)
- Cost effective synthesis of carbon nanotube composites
- Metal/Ceramic nanocomposites and mechanical property evaluation
- Bulk nanomaterials and consolidation using plasma process
- Engineered nanostructures and Density functional theory calculations
- Regenerative oxide nanoparticles for nanobiotechnology and microelectronic applications
- Solgel-microemulsion derived nanomaterials (metals, oxides and sulfides) for gas sensors and detectors
- Nanostructured metal coating of waste materials for value added products
- Nanostructured ceramic coatings for high temperature protection, sensors, and optical components

Surface Engineering and Advanced Analytical Tools

- Surface Science and Advanced Surface Characterization techniques (XPS and AES specialization)
- Adsorption kinetics of polymer molecules on steel substrates
- Molecular bond orientation using NEXAFS
- Bond angle Calculations using EXAFS
- Sample preparation in Auger Electron Spectroscopy using Focused Ion Beam
- Spectromicroscopy at the Advanced Light Source, Berkeley
- TEM studies of composite interfaces (nanoscale)
- Biomaterials and Biocell/material interaction
- Surface modification in Chemical-Mechanical Planarization (CMP)
- Chalcogenide glasses for waveguides and optics applications
- Polymer finger printing using AFM and XPS
- High temperature oxidation of super alloys, steels, Ni and Co base superalloys

Dry and Wet Corrosion

- Nanocoatings for high temperature oxidation of steels (both air and steam)
- High Temperature Corrosion and Protective Coatings
- Superalloy surface oxidation chemistry
- Ceramic matrix composites
- Multiphase corrosion of C-steels
- Inhibitor development program in multiphase corrosion of steels

POST DOCTORAL FELLOW

Lawrence Berkeley Nat'l Laboratory (LBNL), Univ. of CA, Berkeley Sep 1996 – Aug 1997

- Responsible for developing the hardware for X-ray photoelectron spectromicroscopy (SPEM)
- Engaged in the development of e-beam heater, sputter gun and electron gun
- Involved in the Scanning transmission x-ray microscopy instrumental development and application
- Characterization and imaging of polymer fibers

Projects Involved

- Spectromicroscopy Studies of Interfaces in Al-Ti-C system (LBL, UWM, (USA) & FRI, Poland)

IV. CANDIDATES RESUME

- Surface Chemical and Morphological Study of the Interaction Between Lung Cells and Si-Based Minerals (LBL & UWM, USA)
- Spectroscopic Characterization of Composite Films for Hydroxyapatite in a Collagen Matrix Deposited by Pulsed Laser Deposition (LBL & Naval Res. Lab, USA)
- Investigation on the methods for eliminating voids in Au-Si eutectic. (Motorola)
- Scanning Photoemission Microscopy Studies of Materials for Electronics. (LBL & Poland)
- Investigation of the Physico-Chemical Interaction Phenomenon at BN-Metal Nitride Interfaces: A Spectromicroscopy study. (LBL, UWM, (USA) & IMC, Poland)

Research Assistant (Ph.D.) University of Wisconsin January 1993 - September 1996

- Responsible for the operation and maintenance of a surface science laboratory
- Setup surface analytical techniques, such as, X-ray photoelectron spectroscopy (XPS or ESCA), Auger electron spectroscopy (AES), Fourier-transform infrared spectroscopy (FTIR)
- Setting up a SIMS instrument for surface analysis of materials. (Argon Lab - UWM, USA)
- Designed a setup for low temperature surface analysis of organic systems to study hydrogen bonding by ESCA. (Project: UWM, USA - Cambridge, UK)
- Developed experimental protocols for bio-cells/silicon based surface interactions
- Characterized reaction mechanisms of cellular growth on silicon based surfaces (primarily by XPS)
- Established a unique freeze drying technique for bio-cell and solid surfaces and XPS analysis
- Analyzed surface chemistry of silicates (XPS and MAS-NMR) and biocells (by XPS)
- Performed cell analysis by atomic absorption spectroscopy (AAS)
- Initiated XPS characterization of YAG (Yttrium Aluminum Garnet) and doped (Cr, Mg, Nd, Pr, etc) YAG materials for laser application. (USA- U of Warsaw, Poland)
- Improved production of Cu-Graphite (DOE), Al-SiC (DOE), Al-Ti and Al-Ti-C composites (UWM-Poland)
- Investigated composite interfaces (Al-Ti-C alloys) by different surface techniques, (USA-Poland)
- Studied corrosion and dezincification of Cu-Graphite composites
- Demonstrated application of surface techniques to study the fracture of Al-Li alloy exposed to H₂S atmosphere

Research for (M.S.) University of Sheffield, U.K. November 1991 - August 1992

- Built a chamber to perform preferential oxidation of ultra low carbon steel to measure grain boundaries
- Developed computer simulation to calculate flow stress - strain relationship
- Designed hot rolling parameters for interstitial free steel

Research for (B-Tech.) Indian Institute of Technology, India September 1989 - May 1990

- Fabricated a furnace to study the high temperature behavior of austenitic steels
- Developed ceramic coatings to prevent corrosion
- Incorporated ceria coatings into austenitic stainless steels
- Performed post oxidation studies using optical microscopy, scanning electron microscopy (SEM), energy dispersive spectroscopy (EDS) and x-ray diffraction (XRD)

IV. CANDIDATES RESUME

INDUSTRIAL

- Jun 1995 – July 1995 **Dynapro Thin Film Products**, WI, Curricular Practical Training
Provided guidelines for processing optimized of Indium Tin Oxide coated touch panels
- Jun 1996 – July 1996 **Dynapro Thin Film Products**, WI, Curricular Practical Training
Involved in a surface study of defective thin films
- May 1997 – July 1997 **Rayovac Corporation**, WI, Curricular Practical Training
Developed protective coatings for high temperature corrosion prevention for battery cans
- July 1990 – Sep 1991 **Tata Iron and Steel Making (TISCO)**, India
Chemistry of iron making
Modeling of blast furnace temperature distribution
Research and development of new iron and steel making process
Training in all Tata Industries including its mines (Jamadoba mines, TAS)
Tata Administrative Service (TAS)
Successful completion of Management certificate in XLRI Management Inst. Jamshedpur

RESEARCH AT SURA INSTITUTIONS

- University of Florida on a Nano Bio Sensor with Agricultural and Biological Eng under a NASA grant. Also currently we have a joint grant with U Florida Material Eng on nanomaterials for SOFC under a NASA grant
- Florida International University - Again I have worked extensively with Prof Agarwal on nanocoatings and now have a grant from NASA. We have jointly published joint articles in many prestigious Materials Journals including Acta Materialia, Material Science and Eng Reports (IF: 1.4), Materials Research Bulletin - Guest Editor and article (IF: 4.5). I have also mentored Dr. Agarwal who received the CAREER award.
- With NC State, Seal doing some collaborative research and text book on Structural Nanomaterials will come out early 2007 from Cambridge University Press.
- With Oklahoma University Seal is involved in Nano-Tissue regeneration research for preventing blindness partially funded by NIH and NSF. Multiple presentation and now a paper on Nature Nanotechnology is published and subsequently quoted in NY Times - October 31-06. This is next generation high technology research and is well aligned with SURA vision.
- With U of Tennessee Seal has worked on surface modification of next generation coatings and jointly published 4-5 papers and organized 4 conferences and serve as joint Guest Editor for JOM journal since 2002.
- Seal runs a very successful Research Experience for Undergraduates in Nanotechnology (one of the leading areas in Science and Technology), where undergraduates students participate from SURA and other institutions in the country. The site has created lot of success stories and definitely producing next generation scientists and engineers – one of SURA's vision.
- Beyond collaborative research in SURA institutions, Seal has established a strong partnership with Pacific Northwest National Lab (PNNL) in the field of surface science and nanotechnology (going from Regional to National – another SURA's vision)

IV. CANDIDATES RESUME

- Interaction with Oak Ridge National Laboratory Scientists: Environmental Surface Chemistry, where Seal has worked with ORNL scientists to look at the surface species key to environmental pollution. Seal has a joint publication with ORNL scientists. S. D. Brown, M. Martin, S. Deshpande, **S. Seal**, K. Huang, E. Alm, Y. Yang, L. Wu, T. Yan, X. Liu, A. Arkin, K. Chourey, J. Zhou, and D. K. Thompson, "Cellular Response of *Shewanella oneidensis* to Nonradioactive Strontium Stress", *Applied and Environmental Microbiology*, 72(1), 890-900, 2006.

IV. CANDIDATES RESUME

FUNDED RESEARCH & PROJECTS

(1 9 9 7 - P R E S E N T)

FEDERAL FUNDING (Several NSF and NIH proposal pending)

Total 10,237,750 (10 million)

Agency: NSF, Co PI EEC - 0741508

Title: NUE: Preparing Undergraduates for Careers in Nanotechnology

Period: Jun 08 – May 10

Agency: NSF, PI Supplement to CMMI - 0738783

Title: IREE: Vacancy Engineered Rare Earth Oxide Coatings for High Temperature Applications

Period: Aug 07 – Sep 08

Agency: NSF, PI Supplement to CMMI - 0742152

Title: REU: Vacancy Engineered Rare Earth Oxide Coatings for High Temperature Applications

Period: Aug 07 – Sep 08

Agency: NSF, PI Supplement to CMMI - 0629080

Title: UCF PNNL: Vacancy Engineered Rare Earth Oxide Coatings for High Temperature Applications

Period: Aug 07 – Sep 08

Agency: NSF, PI CBET-0708172

Title: NIRT: Engineered Therapeutic nanoparticles as catalytic antioxidants

Period: Aug 07 – Jul 11

Agency: NIH, Co-PI (Scored, 7.5%) yet to be funded R01: AG031529-01

Title: Catalytic properties of nanoceria

Period: Jan 08 – Jan 12

Agency: NIH, Co-PI (with OU as PI) R21: 1R21EY018306

Title: Pharmacokinetics of therapeutic nanoparticles in CNS

Period: Aug 07 – Jul 10

Agency: NIH, Co-PI R21: GM079600-01

Title: Nano ceria as SOD mimetic activity

Period: May 07 – May 10

Agency: NSF, PI CBET: 0711239

Title: Surface Chemistry in metal oxide nanoparticle cytotoxicity.

Period: Mar 07 – Feb 08

Agency: NASA Glenn, Co- PI NAG XXXX

Title: Development of Nanocrystalline materials for Intermediate temperature SOFCs (IT-SOFC) applications.

Period: Jan 07 – Jul 08

Agency: Florida Space Grant, Co- PI Y2: 16296041

Title: Nanocrystalline composites as novel, high performance electrodes for Direct methanol fuel cell space applications: Breaking the Ru-Pt catalyst barrier.

Period: Sep 06 – Aug 07

Agency: Missile Defense Agency, Co- PI MDA: HQ 000805 C 0023

Title: Nanoparticle additives as solid rocket propellants - MSTAR BAA 05-012

IV. CANDIDATES RESUME

Period: Jan 06 – Jan 08

Agency: NASA ASRC, PI

Title: Nanoparticles tubes integrated MEMS device for point contact high sensitive H sensor

Period: Jul 2005 – Dec 2006

Agency: National Science Foundation (NSF), PI

NSF BES: 0552438

Title: Development of a novel membrane process for the immediate production of drinking water from varying quality aqueous resources – Katrina Disaster Funding Call

Period: Oct 2005 – Aug 2007

Agency: National Science Foundation (NSF), PI

NSF CMS: 0548815

Title: Vacancy Engineered rare earth oxide coatings for high temperature applications

Period: Sep 2005 – Aug 2007

Agency: National Science Foundation (NSF), PI

NSF BES: 0541516

Title: Biologically compatible engineered nanoparticles to prevent UV radiation induced damage

Period: Sep 2005 – Dec 2007

Agency: National Science Foundation (NSF), Co-PI

NSF ECE: 0521497

Title: NSF MRI: Acquisition of NIL (Nano imprint Lithography) System

Period: Sep 2006 – Dec 2007

Agency: National Science Foundation (NSF), PI

DMII: 0500268

Title: Collaborative Research: A Novel Approach to Improve the Interfacial Strength of Hydroxyapatite Coated Implants for Orthopedic and Dental Applications

Period: Aug 2005 – Aug 2007

Agency: National Science Foundation, PI

EEC: 0453436

Title: NSF-REU SITE (International): In Functional Nanostructures

Period: May 2005 – May 2008

Agency: NASA SRI UCF – UF program, UCF Co-PI

Title: A Needle type Nanomaterial Integrated Biochemical sensor for In-situ Plant Physiology Monitoring

Period: Jan 2005 – Dec 2005

Agency: NASA Glenn, UCF PI

NASA NAG 32751

Title: Highly Selective Nano-MEMS Low Temp H Sensor – 3rd year

Period: Dec 2004 – Dec 2005

Agency: NSF-MRI, Co-PI

NSF: DMR-0421253

Title: Acquisition of a Novel Raman and Fourier-Transform Infrared Microscope for Research and Education in Bio-Materials, Nanoscience, and Forensics

Period: Sep 2004 – Aug 2005

Agency: NASA-FSGC, PI

Title: Nanostructured membranes for H separation

Period: Sep 2004 – Aug 2005

Agency: NSF, NER Co- PI

NSF: CTS 0404174

Title: Nanofluids

Period: Jun 2004 – Dec 2006

Agency: DOE SBIR Phase I, Materials Interface (75097B04-I) PIDOE:

DE-FG02-04ER83994

Title: Nanocerium as high T coatings

Period: Aug 2004

Agency: NSF, UCF PI

NSF: CTS 0350572

Title: Highly selective and sensitive hydrogen sensors

IV. CANDIDATES RESUME

Period: Apr 2004 – Mar 2005

Agency: NASA Glenn, FSEC., UCF PI

NASA NAG 32751

Title: Nanostructures for hydrogen sensing – 2nd year

Period: July 2003 – Sep 2004

Agency: DOE SBIR Phase II, Subcontract from Plasma Proc., UCF PI

Approved to be set

Title: Spray formed W based composites

Period: Oct 2003 – Sep 2005

Agency: NSF, UCF PI –

DMI: 0334260

Title: Nano Workshop for US Scientists at the International Conference on NANOMATERIALS AND NANOTECHNOLOGIES - NN2003, Crete, Greece, 2003

Period: Jul 2003 – Jun 2004

Agency: NIH, UCF Co-PI

NIH: R01AG022617

Title: Nanoparticles for antioxidants and promoters of cell longevity

Period: Aug 2003 – Jul 2008

Agency: NSF NUE, UCF PI

EEC: 0304525

Title: A research and curriculum development in nanotechnology

Period: Jul 2003 – Jun 2005

Agency: DURIP-ONR, UCF PI

ONR: N000140310858

Title: Plasma forming of nanoparticles to bulk nanocomponents

Period: Jun 2003 – May 2004

Agency: NASA SBIR Phase II, Subcontract from Plasma Proc., UCF PI

Title: Spray formed W based composites reinforced with nano W + MC for high T applications

Period: Jan 2003 – May 2005

Agency: NASA Glenn, UCF PI

NASA NAG 32751

Title: Nanostructures for hydrogen sensing

Period: July 2002 – Sep 2003

Agency: SBIR I: DOE, Subcontract from Plasma Proc., UCF PI

Title: Spray formed W based composites reinforced with nano W + MC for high T applications

Period: May 2002 – May 2003

Agency: SBIR I: DOD-BMDO, Subcontract from Plasma Proc., UCF PI

Title: Spray formed Alumina based composites reinforced with nano alumina.

Period: Oct 2002 – May 2003

Agency: FY 2002, ONR YOUNG INVESTIGATOR AWARD, PI ONR: N000140210591

Title: Nanomaterial synthesis and consolidation to bulk components

Period: May 2002 – Apr 2007

Agency: National Science Foundation, PI

EEC: 0136710

Title: US-Australia joint research: Solgel derived monodisperse nanomaterials

Period: May 2002 – May 2005

Agency: National Science Foundation, PI

EEC: 0139614

Title: NSF-REU SITE In Nanotechnology

Period: May 2002 – May 2005

Agency: NASA-KSC, PI

Title: High selectivity, high sensitivity gas sensors based on nanocrystalline materials,

Period: Jan 2002 – Dec 2002

IV. CANDIDATES RESUME

Agency: National Science Foundation, PI EEC: 0086639
Title: Interaction mechanism of imidazoline inhibitors with C-steel in corrosion product layer (CPL) evaluation in multiphase CO₂ corrosion
Period: Sep 2000 – Aug 2001

Agency: National Science Foundation-REU, PI EEC: 0086639
Title: Solgel derived nanoceramic particles
Period: Aug 2001 - Sep 2003

Agency: National Science Foundation-REU, PI EEC: 9907794
Title: Understanding the Corrosion Chemistry of Carbon Steel in Multiphase Environments in the Presence of Corrosion Inhibitors Using Surface Spectroscopic Techniques
Period: Aug 2000 - Apr 2001

Agency: National Science Foundation, Co-PI (PI: K. Richardson) DMR: 9974129
Title: Bulk/Film Structural Comparison of Chalcogenides Glasses for Waveguide Applications
Period: June 1999 – May 2003

Agency: National Science Foundation, PI EEC: 9907794
Title: Understanding the Corrosion Chemistry of Carbon Steel in Multiphase Environments in the Presence of Corrosion Inhibitors Using Surface Spectroscopic Techniques
Period: July 1999 – April 2001

Total: 4,521,055
INDUSTRY FUNDING

Agency: Dave and Pappas Law firm and Paul Corp
Title: Seal Research Donation
Period: No Limit

Agency: nSolGel PI
Title: Development of Ecocrete via Environmentally friendly materials manufacturing process.
Period: Apr 07 – Jun 08

Agency: Siemens Westinghouse PI
Title: Nanocoatings
Period: Jul 2007 – Feb 2008

Agency: Pratt Whitney PI
Title: Nanocoatings for high temperature applications
Period: Feb 2007 – Feb 2008

Agency: Materials Interface Inc, PI
Title: Donation to Seal Research

Agency: Semplastics, PI
Title: Donation to Seal Research

Agency: Pall Corporation, PI
Title: Donation to Seal Research

Agency: Nelson Engineering, PI
Title: Analysis Chock- Polymeric Material
Period: Sep 2006 – Aug 2007

Agency: Lockheed Martin, PI
Title: Functional nano/micro AR coatings on Chalcogenide glasses
Period: Feb 2006 – Dec 2006

IV. CANDIDATES RESUME

Agency: NASA ASRC, I4 matchPI

Title: Nanoparticles tubes integrated MEMS device for point contact high sensitive H sensor

Period: Jul 2005 – Dec 2006

Agency: Orlando Regional Health Care System, PI

Title: Nanoparticles for cancer therapy

Period: Aug 2005 – Aug 2006

Agency: Lockheed Martin, PI

Title: Functional nano/micro AR coatings on Chalcogenide glasses

Period: Aug 2005 – Aug 2006

Agency: Lockheed Martin, PI

Title: Functional nano/micro AR coatings on Chalcogenide glasses

Period: Aug 2005 – Aug 2006

Agency: Plasma Process, PI

Title: Characterization of W, W-Re with nano dispersoids

Period: Aug 2005 – Feb 2006

Agency: Siemens Westinghouse, PI

Title: Development of Plasma Spray Facility

Period: Mar 2005 – Feb 2006

Agency: Siemens Westinghouse, C-PI

Title: Development of Plasma Spray Facility

Period: Mar 2005 – Feb 2006

Agency: Siemens Westinghouse, PI

Title: Development and Evaluation of nano/micro catalytic coatings

Period: Mar 2005 – Feb 2006

Agency: Lockheed Martin, PI

Title: Functional nano/micro AR coatings on Chalcogenide glasses

Period: Aug 2004 – Jan 2005

Agency: Siemens Westinghouse, PI

Title: Nanomaterials – use in turbine repair – A feasibility study

Period: Jan 2004 – Jul 2004

Agency: Constellation Technology, DARPA, PI

Title: Nanoscale silica coatings on detectors

Period: Oct 2003 – Sep 2004

Agency: PsiloQuest, PI

Title: Nanoscale surface characterization of surface modified polymers

Period: Jul 2002 – Jul 2003

Agency: Siemens Westinghouse, PI

Title: Solgel derived nanostructured coatings for local damage repair

Period: Jul 2002 – Jul 2003

Agency: Whirlpool, PI

Title: Nanocoatings on steel to prevent discoloration during oxidation.

Period: Nov 2001 – Apr 2002

Agency: Plasma Process Inc, PI

Title: Nanoscale characterization of nanoalumina coated components.

Period: Nov 2001 – Jan 2002

IV. CANDIDATES RESUME

Agency: US-Filter, PI
Title: High temperature oxidation studies of hot gas filters
Period: Jan 2000 – June 2001

Agency: Lucent Technologies, Co-PI
Title: Metal CMP
Period: July 1999 – Jun 2002

Agency: Energy Strategy Associates, PI
Title: An Innovative Copper Coating of Ceramic/ Glass Hollow Microspheres and Fumed Silica Nano-sized Solid Spheres for Conductive Filler Applications
Period: Jan 2000 – Dec 2000

Agency: Bionucleonics Inc., PI (Co-PI V. Desai)
Title: Microstructure-property relationship and surface chemical finishing of stent-biomaterial for prevention and treatment of coronary artery disease
Period: Jan 2000 – Dec 2000

Agency: Siemens Westinghouse, Co-PI (PI – V. Desai)
Title: Studying the high temperature performance of ceramic matrix composites for gas turbine applications
Period: July 1999 – Jun 2001

Agency: Energy Strategy Associates, PI
Title: An innovative copper coating of coal combustion by products for conductive filler application: Value added recycling waste
Period: July 1999 – June 2000

Agency: Walt Disney World Co., PI
Title: High density polymer fingerprinting by XPS
Period: Aug 1999 – July 2000

Agency: US Display Consortium, Co-PI, (Others: Q. Chu, D. Zhao. K. Lin)
Title: Development of MEMS based motion testing
Period: Jan 1999 – Dec 1999

Agency: US Display Consortium, Co-PI, (Others: Q. Chu, D. Zhao. K. Lin)
Title: Vibration testing and particle counting for PST
Period: Jun 1998 – May 1999

Agency: I-4/Lucent Technologies, PI
Title: Electromigration and XPS characterization
Period: Aug 1997 – June 1998

INTER-UNIVERSITY/FEDERAL/INT'L FUNDING

Agency: Japan Society of Promotion of Science Fellowship, Ministry of Education, Japan
Title: Surface modified nanostructured materials and its stability in harsh environment
Period: Feb – Mar 2004

Agency: United Engineering Foundation (UEF), New York, PI
Title: Presentation of technical paper on Nanomaterials at Nanotechnology Conf., Switzerland
Period: Aug 2001

Agency: NSF/IUCRC Multiphase Corrosion center, Ohio University, PI
Title: Surface and morphological characterization of C-steel undergoing multiphase corrosion in oil and gas environment
Period: Jan 1999 - Jan 2000

IV. CANDIDATES RESUME

Agency: University of Queensland, PI
Title: International Travel Grant Award
Period: May 2001 – Jun 2001

Total: 73,000

FLORIDA SPACE GRANT FUNDING

Agency: Florida Space Grant Consortium (USRP) (NASA), Co-PI
Title: Nanocrystalline composites as novel high performance electrodes for Direct methanol fuel cells for space applications: Breaking the Ru-Pt Catalyst barrier.
Period: Sep 2006 – Aug 2007

Agency: Florida Space Grant Consortium (USRP) (NASA), PI
Title: Fabrication of nanostructured Ti-Al thin films for aerospace application (7K match)
Period: May 1998 – April 1999

Agency: Florida Space Grant Consortium (USRP) (NASA), PI (Co-PI: K. Sundaram)
Title: Fabrication and characterization of nanostructured hard coatings for aerospace application (4K match)
Period: May 1999 – April 2000

Agency: Florida Space Grant Consortium (Research) (NASA), Co-PI, (PI: M. Hampton)
Title: Hydrogen storage in quasicrystals of Ti-Zr-Ni and Ti-Mg-Ni alloys (10K match)
Period: May 1998 – April 1999

Agency: Florida Space Grant Consortium (Ph.D. Fellowship) (NASA), PI
Title: Ph. D. fellowship for J. Lomness (One year only: 5K match)
Period: May 1998 – April 1999

UNIVERSITY FUNDING

Agency: SMART Grant, Burnet Honors College, PI (Rene)
Title: Carbon Nanotube Reinforced Composites
Period: Summer 2007

Agency: Presidential Initiative to Fund Major Equipment, PI
Title: Nanoimprint Lithography
Period: Jan 2006 – Dec 2006

Agency: Presidential Initiative to Fund Major Equipment, PI
Title: Plasma guns for Plasma nanomanufacturing lab
Period: Jan 2005 – Dec 2005

Agency: Presidential Initiative to Fund Major Equipment, Co-PI
Title: Plasma guns for Plasma nanomanufacturing lab
Period: Jan 2005 – Dec 2005

Agency: Presidential Initiative to Fund Major Equipment
Title: A BET spectrometer
Period: Jan 2003 – Dec 2003

Agency: UCF Undergraduate Research
Title: Nanostructured materials for enabling technology
Period: July 2003 – June 2004

Agency: UCF Research Initiation Grant, PI (Co-PI – Q. Chen)
Title: Nanostructured nanomaterials for sensing
Period: July 2002 – June 2003

IV. CANDIDATES RESUME

Agency: INTAC award from UCF, PI

Title: International Collaboration with MMAE/AMPAC and University of Queensland Australia

Period: May 2001 – Jun 2001

Agency: University of Central Florida, UCF, PI

Title: Undergraduate Research Initiative – Chemical behavior of steels-multiphase flows

Period: October 2000 – Apr 2000

Agency: Presidential Initiative to Fund Major Equipment, Co-PI (PI: A. Shulte)

Title: Micro-Positioning Equipment for Near Infrared Micro-Raman Spectroscopy

Period: Jan 2000 – Dec 2000

Agency: INTAC award from UCF, PI

Title: International Collaboration with MMAE/AMPAC and University of Mining and Metallurgy, Krakow, Poland

Period: May 1999 – Jun 1999

Agency: UCF Research Initiation Grant, PI

Title: Development of coatings for super alloys and their oxidation behavior

Period: July 1998 – June 1999

Agency: College of Engineering Grant (Came from Dean)

Title: XPS Computer upgrade at MCF (Coordinated the effort - money to MCF)

Period: Jun 1998

PROPOSALS FOR USER TIME AT THE SYNCHROTRON RADIATION CENTERS

Agency: EMSL – PNNL – 18790

Title: Chromium diffusion kinetics in nanoceria and doped ceria coatings: UCF-PNNL Collaboration

Amount: 1 year

Period: 2006-2007

Agency: EMSL – PNNL – 11696 (Co-PI, PI: D. Baer: 33714)

Title: Ceria NanoParticles

Amount: 1 year

Period: 2005

Agency: SLAC-Stanford, Beamline 6.3.2, Stanford, PI (KCR and S. Myneni from Princeton)

Title: NEXAFS to probe as K edge variation in chalcogenide glasses (As-S, As-Se, and As-S-S-Se) for wave guide devices

Amount: 4 shifts

Period: Feb 2002

Agency: ALS – 00456, Beamline 10.3.2, LBNL, UC-Berkeley, PI (Co-PI KCR)

Title: Using spatially resolved NEXAFS to probe as K edge variation in laser irradiated chalcogenide glasses (As-S, As-Se, and As-S-S-Se) for wave guide devices

Time: 8 shifts

Period: Sep 2000

Agency: ALS – 00455, Beamline 7.3.1.1, LBNL, UC-Berkeley, PI

Title: Application of PEEM and NEXAFS to understand the inhibitor absorption on C-steel for corrosion prevention in oil and gas industries

Time: 8 shifts

Period: Sep 2000

Agency: Beamline 7.3.1.1, LBNL, UC-Berkeley, PI

Title: Application of SPEM in Al-Ti-C composites

Time: 8 shifts

Period: Sep 1997

OTHER SIGNIFICANT ACHIEVEMENTS

Agency: Proposal to *Florida Board of Regents*: (Co-author: V. Desai)

Title: Official **Masters degree** in Materials Science and Engineering

IV. CANDIDATES RESUME

Status: Approved, 1999

Agency: Proposal to *Florida Board of Regents*: (Co-author: V. Desai)

Title: Official **Ph.D. degree** in Materials Science and Engineering

Status: Approved, 2000

IV. CANDIDATES RESUME

INSTRUCTION EXPERIENCE, INTEREST and PLANS

GRADUATE INSTRUCTION

NEW COURSES DEVELOPED

- XPS and AES (Spring 2001)
 - New course delivered – laboratory included
- Kinetics (Fall 1998)
 - New course developed
- Surface Science (Fall 1999)
 - Developed the course for materials, physics and chemistry.

UNDER THE NATIONAL SCIENCE FOUNDATION NUE PROGRAM

- Introduction to Nanomaterials Process Engineering (Fall 2003)
 - New course developed for the NSF NUE program
- Nanomaterials Characterization and Applications (Fall 2003)
 - New course developed for the NSF NUE program
- Coordinator of other NSF NUE Nanomaterials Courses (Fall 2003)
 - In collaboration with Physics – Introduction to nanophysics
 - Education – Ethics in nanoscience and nanotechnology
 - Biology and Chemistry – Introduction to nanobiotechnology
 - Photonics – Introduction to nanophotonics

MAJOR MODIFICATION OF COURSES

- Thermodynamics: Materials Science (Fall 2000)
 - Introduced industrial examples and course modification
- Deformation and Fracture (Spring 1999)
 - Modified the course for both Graduates and Undergraduates
- Phase Transformation (Fall 1998)
 - Developed the course more mathematically
- Corrosion Science and Engineering (Fall 1997)
 - Introduced surface analytical techniques to study corrosion

UNDERGRADUATE INSTRUCTION

- Structure and Properties of Materials (Fall 2001)
 - New style of instruction for undergraduates
- Mechanical Engineering Thermodynamics (Summer 1998), UCF – organized plant tours
- Introduction to Materials (Fall, Spring 1996), UWM – Teaching assistant
- Introduction to Materials (Fall, Spring 1995), UWM – Teaching assistant
- Introduction to Materials (Fall, Spring 1994), UWM – Teaching assistant

IV. CANDIDATES RESUME

INTEREST AND PLANS

- Quality instruction of several basic and advanced courses in materials engineering and related areas at the undergraduate and graduate level
- Participation in collaborative efforts in teaching
- Advising and recruiting undergraduate and graduate students
- Attain excellence in teaching
- Develop, operate and maintain appropriate teaching laboratories
- Participation in university/industry partnerships and professional service

My teaching interests are closely connected with my research field. I am confident that I could offer basic courses in materials science and engineering for both undergraduate and graduate students. Special courses on Modern X-ray Technology, X-ray Analytical Techniques, Surface Physics and Chemistry, Nanotechnology and Nanostructured Materials could be ideally combined with my research interests.

In my current position I have found seminars and practical exercises for students to be a very important part of training and instructing. I often conduct industrial tours and schedule guest speakers. These events are also important for the instructor as a source of information derived from feedback from students. I am confident that I can contribute with both my knowledge and my interests to improving on-line and interactive courses.

Other interest lies in training K-12 students and High school teachers in the area of nanoscience and nanotechnology.

IV. CANDIDATES RESUME

STUDENT SUPERVISION

POST DOCTORAL FELLOW SUPERVISION

- Dr. S. Patil** Title: Nanostructure materials for biological applications – From 2006
- Dr. S. K. Babu** Title: Funtional nanostructures: Synthesis and Applications – From 2006
- Dr. S. C. Kuiry** Title: Nanostructure materials: Synthesis and Applications – From 2001 – 2005
- Dr. S. V. Shukla** Title: Phase stabilization in nanomaterials and application to sensors – From 2002 – 2005
- Dr. W. Fei** Title: Nanostructures and instrumentation – From 2004 – 2005
- Dr. S. Hong** Title: Functional nanostructures (Visiting from South Korea) – From 2004 – 2005

P H . D . SUPERVISION

MAJOR ADVISOR

- S. V. Shukla** Title: Synthesis and characterization of solgel derived nanomaterials and nanocrystalline metal coatings
Completion: December 2001
- J. Ramsdell** Title: Development and understanding of polyeurathanes for CMP.
Completion: September 2002
- W. Li** Title: Structure property relationships in Chalcogenide waveguides
Completion: April 2003
- W. Fei** Title: High Temperature oxidation FeCrAlY fibers and solgel surface modification for protection and catalyst support
Completion: November 2003
- D. Bera** Title: Synthesis and Characterization of Nanostructured Sensors
Completion: Apr 2005
- P. Georgieva** Title: Development of thermally processed nanocomposites with controlled surfaces
Completion: April 2006 (Summer – 06)
- S. Patil** Title: Fundamental aspect of regenerative ceria nanoparticles and its application in Nanobiotechnology.
Completion: Summer 2006
- V. Viswanathan** Title: Plasma processing in retention of nanostructures
Completion: May 2007
- S. Deshpande** Title: Functional rare earth nanostructures
Completion: May 2007
- S. Kutcibotla** Title: Vacancy formation in Nanomaterials and its emerging applications
Completion: May 2007
- C. Drake** Title: Understanding the low temperature electrical properties of nanocrystalline SnO₂ for gas sensor applications.
Completion: May 2007
- A. Karakoti** Title: Nanomaterials at the Interface Engineering
Completion: Dec 2008
- A. Vincent** Title: Molecular imaging of nanoparticles
Completion: TBA
- D. Reid** Title: I-D nanostructures
Completion: TBA
- E. Brinley** Title: Nanomaterials and coatings from precursor plasma spray
Completion: TBA

IV. CANDIDATES RESUME

OTHER SIGNIFICANT ADVISEMENT and IN P.H.D. DISSERTATION COMMITTEE

C. Hobbs	Title: An investigation of size exclusion and diffusion controlled membrane fouling, Civil Eng, 2007
J. Aerevalo	Title: Modelling free chlorine and chlorine decay in pilot distribution, Civil Eng, 2007
M. Das	Title: A long term culture model to grow and study the functional recovery of adult mammalian spinal cord cells, Candidacy 2006, To complete 2008
Y. Guo	Title: Raman Spectroscopy of Glass with high and broad Raman gain in the boson peak region, Summer 2006.
C. Lopez	Title: Evaluation of Photoinduced Structural Mechanisms of Chalcogenide glasses, 2004
S. Zhong	Title: Surface films in corrosive pipe lines, 2003
S. Zhaou	Title: Effect of Source Water Blending On Iron and Lead Release: Thermodynamic and Statistical Modeling, 2003
Z. Blanchard	Title: Silicon carbide thin film studies, 2000
H. Sfeir	Title: Effect of Biotic Degradation of Halogenated Aliphatic Compounds on Zero-Valent Iron, 2001
D. Tamboli	Title: Mechanistic aspects of W metal CMP in microelectronics, 2000
N. Ruiz	Title: Application of ultrasound to enhance the zero valent iron initiated abiotic degradation of halogenated aliphatic, UCF, 1998
D. K. Verma	Title: Structure and chemistry of chalcogenide glasses, 1999-2000
C. Cho	Title: Membranes for water filtration, 2003
J. Zang	Title: Non destructive evaluation and monitoring of TBC by EIS, UCF, expected completion, 2001
R. Mores	Title: Fracture welded joints under impulsive loads using a local damage criterion, 2001

MASTERS SUPERVISION

MAJOR ADVISOR

R. Kumar	Title: Vacancy engineered doped and undoped nanocrystalline rare earth oxide nanoparticles for high temperature oxidation resistant coatings, 2007
K. Rea	Title: Bulk nanostructures, UG/MS student, 2006
E. Brinley	Title: Nanocoatings for optical devices (to be decided)
S. Deshpande	Title: Surface modification of ASP pads and Cu CMP, 2004
I. Mukherjee	Title: Simulation of nanoparticle formation and its networking, 2004
S. Patil	Title: Synthesis and application of nanocerica, 2003
P. Moore	Title: A study of Flow Improvers in Wet Gas Pipelines, 2003
K. Sapre	Title: Inhibitor- C-Steel interaction in multiphase corrosion environment, 2001
S. Wannapurhun	Title: High temperature corrosion of ceramic metal matrix composites, 2001
P. Verghese	(Co-advisor) Title: High temperature corrosion of ceramic metal matrix composites, 2001
J. Akesson	Title: Mechanistic aspects of electroless copper on ceramic substrates for EMI shielding, 2000
L. Bracho	Title: High temperature oxidation mechanistic of Ni-base super alloy, 1999
A. Kale	Title: Processing and characterization of novel Ti-Al and Ti-Al-N thin films, 1999
R. Nardelli	Title: Superficially applied rare-earth elements on the oxidation behavior of Fe-Cr alloys, 1998

THESIS COMMITTEE

Gino Carro	Title: Solid Rocket propellant Aerospace, 2007
E. Heckert	Title: Catalytic properties of nanocerica, 2007
V. Somani	Title: Alumin-alumin-titanate-titania nanocomposite synthesis, sintering, assessment of bioactivity and its mechanical and electrical properties, Spring 2006.
J. C. Arvanetes	Title: Design and Implementation of an emission spectroscopic in a high pressure strand burner for the study of the solid propellant combustion, Spring 2006.

IV. CANDIDATES RESUME

- A. Mehta** Title: Micromachined sensor for H₂O₂ and Cl detection, Nov 2005.
J. Liu Title: Slurry chemistry study on copper chemical mechanical planarization, 2003
S. Dakshinamurthy Title: Instrumented nanoindentation studies of CMP pads, 2003
S. Rajagopalan Title: Commissioning of an instrumented nanoindenter for studies of deformation in shape memory alloys, 2003
S. Nonnenmann Title: Raman spectroscopic investigations into novel TeO₂ based compositions for potential raman gain applications, 2002
R. Ewasiuk Title: Slurry Loop Studies in CMP, 2001
S. Beverly Title: Membrane studies, 2000 (Advised)
M. Despande Silicon-glass and silicon-silicon bonding, 1999

OTHER SIGNIFICANT ADVISEMENT

- G. Mann** Title: XPS of dental alloys, UWM, May 1997
J. Bruckner Title: Hydrogen bonding, UWM, May 1996

UNDERGRADUATE RESEARCH PROJECT SUPERVISION

- Rene Diaz (M)** Nanocoatings (Lockheed), Hispanic, 2006
M. Piedrahita(F) Nanoparticles and Q dots (NSF), Hispanic, 2006
K. Walker (M) Nanooptical coatings (Lockheed), African American, 2006
R. Nunez (M) Plasma coatings (ONR), Hispanic, 2006
T. Spallding (M) Nanoadditives (MDA), 2006
C. Mansfield (F) Nanocoatings (LMCO), 2006
N. Posey (M) Nanosensors (NASA), 2006
A. Amalu (F) Nanostructures for devices (NSF REU), African, 2006
S. Bauer(M) Plasma nanomanufacturing (Siemens), 2006
D. Bernard (F) Nanomaterials for sensors, (NASA), Asian, 2005
L. Ngyan (F) Nanosensors (NSF), 2005
J. P (M) Nanoxides for sensors (NSF), 2005
R. Filmater(M) Anodization of nanotubes, 2005
G. Johnston Nanotubes, 2004
J. Duarte (M) Nanosensors, (NSF REU), Hispanic, 2004
V. Mejia (F) Coatings on detectors, (Constellation Tech), Hispanic, 2004
J. Brieno (M) Nanosilica coatings on detectors, (Constellation Tech) 2003
P. Prabhakar (M) Nanoceria on silicon chips, (at Stanford) 2003
M. Nugeant (M) Nanocoatings on Metals, (PPI) 2003
M. McKuthchem Carbon nanotubes, (FSGC fellow) 2002-2004
K. Rea (M) Plasma formed nanostructures, (PPI, NSF) 2002, 2003, 2004
R. Lejiste (F) Nanomaterials, UCF (Lead Scholars) 2002
R. Holmes (M) Surface Instrumentation, UCF (NSF-REU, CMP) 2001-2002
E. Magen (M) Solgel nanosensors, UCF (NSF-REU) 2001 - 2002
B. Heneien (M) Electroless coating and surface instrumentation, UCF (NSF – REU) 2001
T. Smith (M) Inhibitor development, UCF (NSF REU) 2000 – 2001
E. Stan (F) Surface analytical tools development, UCF (NSF-REU) 2000
D. Hasburger (M) Polymer finger printing, (Disney)1999
D. Jimenez (F) Ti-Al-N hard coatings for aerospace applications, (FSGC), Hispanic, 1999
M. Boyd (M) Designing of a chamber for preparation of metastable materials, 1999
K. Beaulieu (M) Designing of a chamber to deposit Ti-Al thin films, (FSGC) 1998
E. Hoppe (F) XPS in silicates, UWM, 1995-1996

TECHNICAL ENGINEER SUPERVISION

- V. Andrescu** Carbon nanotube setup, (NSF RET) 2003

UNDERGRADUATE RESEARCH HONORS THESIS

- E. Stone (F)** Development of a novel membrane process for the immediate production of drinking water from varying quality aqueous sources, 2006

IV. CANDIDATES RESUME

T. Spallding (M)	Nanoparticle reactors
R. Diaz (M-H)	Plasma spraying of Maxphase-CNT composite
J. King (F)	Qdots conjugated rare earths
A. Ellison (M)	Application of nanotechnology in biological system, 2004
C. Corrsvik (F)	SOD mimetic activity of ceria nanoparticles, 2007 (HIM Thesis)

HIGH SCHOOL RESEARCH PROJECT SUPERVISION

G. Slane	Nanotubes from solutions, (NASA) 2003
A. Patel	Making magnetic rare-earths (NIH, NSF), 2003
D. Bernard	Nanoparticles in biology, 2004

STUDENT PLACEMENT UNDER THE GUIDANCE OF DR. SEAL

- 1997 Elizabeth Hoppe (Ph.D. under Aita) – Instructor @ University of Wisconsin-Milwaukee
- 1998 Kevin Beaulieu – left for U Mass, MA
- 1998 Robert Nardelli (MS) – US NAVY, Charlotte, NC
- 1999 Ajay Kale (MS) – (Ph.D.) University of Florida, Gainesville
- 1999 Daniel Hrashburger (BS) – Lockheed Martin, Orlando, FL
- 1999 Leyda Bracho (MS) – Siemens Westinghouse, Orlando, FL
- 2000 Martin Boyd (BS) – NASA
- 2000 Prakash Vargese (MS) – Siemens Westinghouse, Orlando, FL
- 2000 Jorgen Akesson (MS) – Caterpillar and worked in Motorola, IL
- 2001 Benjamin Heneien (BS) - Siemens Westinghouse, Orlando, FL
- 2001 Tom Smith (BS) - Siemens Westinghouse, Orlando, FL
- 2001 Kedar Sapre (MS) – Applied Materials, Santa Clara, CA
- 2002 Surasak Wannapurhun (MS) – University of Florida for Ph.D., Gainesville, FL
- 2003 Ajay Kale (Ph.D.) – Intel Corporation after getting Ph.D. from UF, Oregon,
- 2003 Parimal More (MS) – Concurrent Technologies, Orlando, FL
- 2003 Jeff Ramsdell (Ph.D.) – Faculty @ Appalachian State University, Boon, NC
- 2002 Satyajit Shukla (Ph.D.) – Postdoctoral fellow @ Seal's group – UCF, Orlando, FL
- 2004 Satyajit Shukla (Ph.D.) – Faculty offers from IISC-Bangalore and IIT Bombay, India
- 2004 Wendy Li (Ph.D.) – Post Doc @ CREOL-UCF
- 2004 Wendy Li (Ph.D.) – Post Doc @ NASA Post Doc – NRC Fellow
- 2004 Debasis Bera (Ph.D.) – Summer PNNL Fellow, WA
- 2004 Viglione Mejia (UG) – Part time position @ Siemens Westinghouse, FL
- 2004 W. Fei (Ph.D.) – Part time Post doc @ Seal's SNF lab, UCF, FL
- 2004 K. Rea (UG) – Working @ Mitsubishi Power Systems, Orlando, FL
- 2004 I. Mukherjee (MS) – Brighthouse Network, Orlando, FL
- 2005 P. Georgiva (Ph.D.) – Praxair Summer Intern, Concord, NH
- 2005 D. Bera (Ph.D.) – Engineer, Sciperio Inc.
- 2005 S. Kuchibatla (Ph.D.) – Summer PNNL Fellow, WA
- 2006 D. Bera – Postdoc, University of Florida, USA
- 2006 K. Filmater (UG) – IT Design
- 2006 N. Posey (UG) – Motorola
- 2006 P. Georgiva (Ph.D.) – Praxair
- 2006 S. Patil (Ph.D.) – Post Doc, UCF, USA
- 2007 V. Viswanathan (Ph.D.) – General Electric
- 2007 C. Drake (Ph.D.) – Lockheed Martin
- 2007 S. Deshpande (Ph.D.) – Applied Materials

IV. CANDIDATES RESUME

Postdoc Placement:

- 2004 S. C. Kuiry (Ph.D.) – Scientist @ CMP Tribotesting Inc. (CTR), CA
- 2004 W. Li (Ph.D.) – NASA – KSC NRC Fellow, FL
- 2005 S. J. Hong – KIT, Korea

IV. CANDIDATES RESUME

HONORS

- 1989 1st in All India Academic Meet, 1989, “ Energy Conservation in Metallurgy”
- 1990 Institute Blue award from IIT, India
- 1991 FCO award in Imperial College of Science and Technology and Medicine, UK
- 1991 ODASSS award and Fellowship for MMet in Sheffield University, UK
- 1991 Selected for RHODES final interview (5 students from all over India)
- 1994 AVS scholarship for a short course, 41st AVS meeting, Colorado, USA
- 1995 Travel Grant Award: From NACE Wisconsin Chapter, USA
- 1995 Travel Grant Award: From GORDON Research Conf, USA
- 1995 Certificate of Recognition by “Refining Industry”, NACE Conf., Florida, USA
- 1995 2nd place, “Student Poster Session”, Spring Conf. Illinois Chapter, AVS, USA
- 1995 Biomaterial Interface Student award, 42nd AVS meeting, Minneapolis, USA
- 1995 AVS scholarship for a short course, 42nd AVS meeting, Minneapolis, USA
- 1995 Honorary Student member of Phi-Kappa-Phi Society, USA
- 1995 Tau-Beta-Pi National Honor Engineering Society, USA
- 1995 Officer of Tau-Beta-Pi National Honor Engineering Society, USA
- 1996 Merrill A. Scheil award: Excellence in Metallography” ASM, Milwaukee, WI USA
- 1996 Honorable Mention “International Metallography Contest”, ASM Int., USA
- 1996 Travel Grant Award: From ASSD, 43rd AVS Conf, USA
- 1996 Student award - best paper, Applied Surface Science, 43rd AVS, USA
- 1996 Invited member of American Association for the Advancement of Science
- 1997 Third place and Hon. Mention: Int. Metallography Contest”, ASM Int., USA
- 1997 Received a “Sg Pin” from Dr. Glenn Seaborg (Nobel Laureate), USA
- 1998 2nd place: Student poster presentation 1998 AVS, FL, USA
- 1998 1st Place award in the “1998 Int. Metallography Contest”, ASM International
- 1999 2nd Place: International Metallography Contest”, ASM International, USA
- 2000 Researcher of the year, Mechanical, Materials and Aerospace Engineering, UCF
- 2000 Research Excellence Award, College of Engineering and Computer Science, UCF
- 2000 Nominated for one of the ASM committee for the year 2000
- 2000 Member of Surface Engineering Committee, TMS
- 2000 Honorable Mention award in the “Int Metallography Contest”, ASM, USA
- 2001 University of Queensland Fellowship Visiting Professor, Brisbane, Australia
- 2001 United Engineering Foundation Fellowship, New York, USA
- 2001 Honorable Mention award in the “Int Metallography Contest”, ASM, USA
- 2001 Excellence in Graduate Teaching, Mechanical, Materials Engineering, UCF
- 2001 Lead Scholarship, UCF
- 2002 Excellence in Graduate Teaching, College of Engineering, UCF
- 2002 Office of Naval Research YOUNG INVESTIGATOR AWARD- ONR YIP 2002 Award
- 2002 Nominated for Sym Application, NATIONAL ACADEMY OF ENGINEERING
- 2002 Nominated for ASM International, Bradely Stoughton Award
- 2002 UCF Research Incentive Award, UCF
- 2002 1st award in the “Int Metallography Contest”, ASM, USA
- 2003 Outstanding Chair Service Award, Surface Engineering, TMS, USA
- 2003 Teaching Incentive Award – TIP, UCF
- 2003 ASM – IIM Visiting Lecturer Award, ASM International, USA
- 2003 Traveling Poster Exhibit Award - Outstanding: Physical Science category, MSA, San Antonio, TX
- 2003 3rd Place: International Metallography Contest”, ASM International, USA
- 2004 Awarded Japan Science and Promotion Award (JSPS) Fellow @ NIMS – nanoresearch.
- 2004 Awarded a 270\$ check for Invited nanotalk and University of Tokyo, Japan

IV. CANDIDATES RESUME

- 2004 2nd place AVS poster “Bulk Nanocomposites” Florida Chapter meeting, FL
- 2004 Research Excellence Award, College of Engineering and Computer Science, UCF
- 2004 1st and Honorable Mention – IMS 04 Poster Contest – ASM,, Hawaii
- 2004 Best Technical Paper and Cash award on nano, IIT Madras Conf, India
- 2005 Best Nanotube Poster, Eng Expo – UCF, Orlando, USA
- 2005 GOLD Award – Graduate of the Last Decade – U Wisconsin-Milwaukee
- 2005 UCF Graduate Research Forum – 1st place – Seal (Advisor)
- 2005 UCF SURE (Undergraduate Research) – 2nd Place – Seal (Advisor)
- 2005 ASM Intl Central Florida Poster (two) Contest Winner (Patil, Petya – Seal (Advisor)
- 2005 2006 Alexander Von Humboldt Fellowship Winner – Germany
- 2005 2nd place in General poster Session 208 Electrochemical Soc Meet, LA, CA
- 2006 Marquis WHO’s WHO selected
- 2006 UCF Millionaires Club
- 2007 ASM Intl. Central Florida Chapter – Poster contest: 1st, Orlando, FL
- 2007 ASM Intl. Central Florida Chapter – Poster contest: 2nd, Orlando, FL

STUDENT HONORS SUPERVISED BY DR. SEAL

- 1999 Hitachi Grand Cash Prize, Ajay Kale, AVS Florida Conference
- 1999 Honorable Mention, Leyda Bracho, AVS Florida Conference
- 1999 Honorable Mention, Sharon Beverly, AVS Florida Conference
- 1999 Honorable Mention, Kevin Beaulieu, AVS Florida Conference
- 1999 1st Place, (Marcel Pourbaix Award) D. Tamboli, NACE, San Antonio, TX
- 1999 2nd Place, (Marcel Pourbaix Award) A. Kale, NACE, San Antonio, TX
- 1999 Dorothy Hoffman Travel/UCF Grant, Leyda Bracho, 46th AVS, Seattle, WA
- 1999 Dorothy Hoffman Travel/UCF Grant, Sharon Beverly, 46th AVS, Seattle, WA
- 1999 Dorothy Hoffman Travel Award, Ajay Kale, 46th AVS, Seattle, WA
- 2000 3rd place, P. Varghese - AVS Florida Conference
- 2000 3rd place, J. Akesson - AVS Florida Conference
- 2000 2nd place, K. Sapre - AVS Florida Conference
- 2000 3rd Place, (Marcel Pourbaix Award) L. Bracho, NACE, Orlando, FL
- 2000 Best Poster, (Shell Oil: T-8 Refining Industry) L. Bracho, NACE, Orlando, FL
- 2000 Dorothy Hoffman Travel/UCF Grant, S. V. Shukla, 47th AVS, Boston, MA
- 2000 DS&T ECS Travel Grant Award, J. Ramsdell, ECS Phoenix, AZ
- 2001 Honorable Mention: T. Smith, AVS Florida Conf. Orlando, FL
- 2002 Honorable Mention: S. Shukla, AVS Florida Conf. Orlando, FL
- 2002 2nd Place: E. Megan, AVS Florida Conf. Orlando, FL
- 2002 DS&T ECS Travel Grant Award, W. Li, ECS Philadelphia
- 2002 DS&T ECS Travel Grant Award, E. Megan, ECS Philadelphia
- 2002 High T Division Travel Grant Award, W. Fei, ECS Philadelphia
- 2002 1st award in the “Int Metallography Contest”, Surasak, ASM, USA
- 2003 Honorable Mention: S. Patil, AVS Florida Conf. Orlando, FL
- 2003 ECS Travel Award to K. Rea (undergraduate) for Paris, France Meeting
- 2003 3rd Place: International Metallography Contest”, to Keith Rea, ASM International, USA
- 2004 2nd place AVS Petya Georgiva Ph.D. Student– AVS, Florida meeting, March, 2004, Orlando, FL
- 2004 NSF Workshop Fellowship to Petya Georgiva for nanomechanics, 2003, Northwestern U, NY
- 2004 NSF Workshop Fellowship to Debasis Bera for nanocomposites, 2003, Northwestern U, NY
- 2004 NSF Workshop Fellowship - II to Petya Georgiva for nanomechanics, April 2004, RPI, NY
- 2004 1st Chemistry – Regional Science Fair and- Amit Patel (High School Student), FL
- 2004 1st Chemistry – Orlando Science Fair- Amit Patel (High School Student), FL
- 2004 3rd Chemistry – Orange County Regional (Ying Expo)- Grady Slane (High School Student), FL

IV. CANDIDATES RESUME

- 2004 Selected for 10 week Summer Institute at PNNL, Seattle, WA, 2004 – D. Bera (Ph.D.)
- 2004 1st Place in UCF Graduate Research Conference (65 Posters), March 2004.
- 2004 3rd Place @ UCF Undergraduate Research Show Case (107 Posters), April 2004.
- 2004 ECS DS&T Travel Award 600\$, D. Bera, ECS Meeting, San Antonio, TX 2004
- 2004 1st Place, ASM Central Florida Chapter Graduate Paper Contest – D. Bera, Orlando, FL 2004
- 2004 1st place poster award @ UCF Graduate Research Excellence D. Bera (Ph.D.), 2004
- 2004 1st and Honorable mention @ IMS Contest, Hawaii – D. Bera, K. Rea, S. Deshpande, S. Patil
- 2004 ECS Electrodeposition Grant Award \$750, D. Bera – 206th ECS Hawaii meeting
- 2004 Vish – Best Technical Paper and Cash Award, IIT Madras Conf, India
- 2004 Vish – UCF Graduate Student Travel Fellowship
- 2005 Divya Bernard – Satellite High – Wins 2nd place poster in nanotechnology
- 2005 D. Bera, E. Brinley, 1st Place – UCF Eng Expo: Nanotubes: Advisor S. Seal
- 2005 E. Brinley, S. Deshpande et al. – UCF Graduate Forum Poster Award Winner – 1st place CREOL, OPTICS, ENGINEERING, IST and Physical Sciences
- 2005 JP et al,m – UCF Undergraduate Research Forum (SURE) – 2nd place in the Engineering, Computer Science and Optics category.
- 2005 S. Patil – ASM Central Florida Chapter Poster Contest Winner
- 2005 P. Georgiva – ASM Intl. Central Florida Chapter Poster Contest Winner
- 2005 C. Drake, S. Deshpande et al., 2nd place in General poster Session 208-Electrochemical Soc Meet, LA, CA
- 2006 Erik Brinley, NSF-DOE sponsored, Pan American Advanced Studies Institute on Ion Nanobeams: Focused Ion Beams for the Nano Era, Buenos Aires, Argentina, from February 20, to March 3, 2006.
- 2006 S. Deshpande, AVS Dorothy Hoffman Travel award, San Fransisco, CA, 2006.
- 2006 C. Drake, S. Deshpande, UCF Graduate Travel Award
- 2006 S. Deshpande, NSF Graduate Travel fellowship to attend ECS Conference, Cancun, Mexico
- 2007 R. Diaz, SMART Grant Award, Burnett Honors College
- 2007 R. Theenaru, ASM Intl. Central Florida Chapter – Poster contest: 1st, Orlando, FL
- 2007 S. Deshpande, ASM Intl. Central Florida Chapter – Poster contest: 2nd, Orlando, FL
- 2007- 2008 D. Reid, Kersten Fellowship (6500/yr x 2) , UCF Orlando, FL
- 2007 S. Kuchibatla (PhD) received prestigious AVS Graduate Research Award

IV. CANDIDATES RESUME

PROFESSIONAL ASSOCIATIONS

ASM, TMS	American Society of Metals
AVS	American Vacuum Society
NACE	National Association of Corrosion Engineers
MRS	Material Research Society
AAS	American Association for the Advancement of Science
ACS	American Chemical Society
ECS	Electrochemical Society

WORKSHOPS

2007	NATO Workshop on Sensors, France
2006	Invited to TACOS oxides DARPA, DC, workshop
2004	Introduction to Nanoscience and Nanotechnology, TMS Meeting
1997	Molecular Environmental Science in the Soft X-ray Region - LBL, UC-Berkeley
1997	Secondary Ion Mass Spectrometry XI - SIMS Conference
1995	Vacuum system and design - AVS
1995	Silicide materials used in integrated circuits and semiconductor industry – MRS
1994	Surface, Biology and Biomaterial - AVS

TECHNICAL EXPERIENCE

TECHNICAL REVIEWING

JOURNALS

- Advanced Materials
- Langmuir
- J of American Chemical Society
- Journal of Vacuum Science and Technology
- Surface Interface Analysis
- Journal of Materials Science
- Vacuum
- Materials Science and Engineering
- Journal of Nanoscience and Nanotechnology
- Applied Surface Science
- Journal American Ceramic Society
- Journal of Sol Gel Science and Technology
- Oxidation of Metals
- Thin Solid Films
- Journal Applied Physics
- Journal Sol Gel Science and Technology
- Journal of Electrochemical Society
- Journal of American Ceramic Society
- Chemical Physics Letters
- Applied Physics Letters
- Phil Mag Letters
- Chemistry of Materials
- Acta Materilia
- Nanoletters
- Material Research Bulletin

IV. CANDIDATES RESUME

- Electrochemical and Solid State Letters

JOURNAL EDITORSHIP

- 2005 EDITORIAL BOARD, International Journal of Materials Science
- 2004 GUEST EDITOR, Materials Research Society (MRS) Bulletin, Jan Issue on Nano.
- 2003 ASSOCIATE EDITOR: Journal of Vacuum Science and Technology A (JVST)
- 2003 EDITORIAL BOARD of Sensor Letters, ASP
- 2003 INTERNATIONAL EDITORIAL BOARD of Journal of Reviews in Advanced Materials (RAMS)
- 2001 EDITORIAL BOARD of Nanoscience and Nanotechnology Journal, ASP
- 2001-2005 ADVISORY BOARD of Surface Engineering, Journal of Metals-JOM, TMS
- 2001 BOARD OF REVIEW for Journal of Metallurgical Transactions A and B, TMS

SPECIAL JOURNAL ISSUE CONTRIBUTION

- 2002 Special JOM Issue: Editor: Nanomaterials in Coatings, September 2003, 2004, 2005
- 2001 Special JOM Issue: Editor: Nanomaterials in Coatings, September 2002
- 2001 Special JOM Issue: Editor: Functional Coatings, September 2001

PROCEEDINGS

- Materials Research Society Proceedings
- TMS Proceedings
- ECS Proceedings
- ASM Proceedings

PATENTS / APPLICATIONS

1. 10/655,986 – Synthesis of Tetragonal phase stabilized nano and submicron sized nanoparticles – S. Seal and S. Shukla (Accepted), 2007
2. UCF 374Div/11/777667 – Divisional Application Filed to 10/655,986, 2007
3. 2002 Patent UCF 60/408,325 (Divisional): 10/655,986, 11/502,728 (Divisional): Solgel derived 100%T phase nano and submicron zirconia – Pending (Pending)
4. 2002 Patent UCF 60/408,275 and 10/655,143: The Use of Cerium Oxide Nanoparticles in extending cell lifespan and ameliorating free radical - induced tissue damage – Pending (Pending)
5. 2003 Patent UCF-Siemens SZ100153ZA01: The synthesis and application of Novel, Low Melting Ceramic Systems for the Repair of Thermal Barrier Coatings in Gas Turbine Components – P. Vinod, S. Seal, S. Shukla and W. Fei, Pending (Pending)
6. 2003 Patent 60/487,711 & 10/891,570: Synthesis of metal filled nanotubes using simple arc discharge method – D. Bera, S. C. Kuiry and S. Seal, Pending – (Pending)
7. 2004 Patent 60/571,907: A Method for Whisker Formation on FeCrAl Fiber Medium Surface for Simultaneous Applications as Advanced Catalyst Support and Highly Efficient Filter – W. Fei, S. C. Kuiry and S. Seal, Pending – (Pending)
8. 2004 Patent 60/588,097: Nanoparticles reduces pressure drop in pipe lines – S. Seal, S. Deshpande, S. Kuiry, P. Jepson, - Pending (1st stage Disclosure)
9. 2004 Patent 10/846,023: Nanoceria – Reduction in soot formation – S. Seal, E. Petersen, S. Kuiry, S. Deshpande, S. Patil, Pending – (Pending)
10. 2004 Patent UCF 478: Room Temperature Hydrogen Detector – S. Seal, S. Shukla, L. Ludwig, J. Cho, Pending (Pending)
11. 2005 Patent US60/685,170: Foreign (PCT/US2006/020472): A nanoceria based regenerative radical sensor – S. Seal, H. Cho, S. Patil (Pending)
12. 2005 Patent 60/778,328: Solgel Composite optical coating for IR applications – S. Seal, E. Brinley (Pending)

IV. CANDIDATES RESUME

13. 2005 Patent 60/727,075 Stem Cells comprising Tissue substitutes – K. Sugaya, S. Merchant, S. Seal and P. Georgiva (Pending)
14. 2005 Patent U-Oklahoma-UCF: UCF 550, 60/676043: Nanoceria particles produces Neuronal Protection in Retinal Cells – J. F. McGinnis, J. Chen, S. Seal, S. Patil (Pending)
15. 2005 Patent 60/705,395: Burn rate sensitization of a nanoTitania additives for solid rocket propellants – E. Petersen, J. Small, M. Stephens, S. Deshpande and S. Seal,– (Pending)
16. 2005 Patent 60/716,630: Inhibition of Reactive Oxygen Species and Protection of Mammalian Cells – J. McGinnis, S. Seal (Pending)
17. 2006 Patent 60/774,351: Vacancy engineered cerium oxide nanoparticles as SOD mimics – W. Self, S. Seal (Pending)
18. 2006 Patent UCF XXX: NanoKnight: J. Taylor and S. Seal (Pending)
19. 2006 Patent: UCF IP ID 7219: A method for increading stem cell proliferation and uses thereof – K. Sugaya and S. Seal (Pending)
20. 2007 Patent: 7809-28: Near ambient temperature water removal method for solgel thin film coatings – S. Seal, E. Brinley, S. Babu, D. Reid, A. Vincent, and C. Rivero
21. 2007 Patent: 60945121: Surface derivatized nanoceria with Human Carbonic Anhydrase II inhibitors and flurophores: A potential drug delivery device – S. Patil, S. Reshtinov, M. Halder, S. Seal and S. Mallik

PROPOSAL REVIEWING and PANELISTS FOR FEDERAL AGENCIES

- Proposal reviewer CRDF- USA and RUSSIA joint proposals
- Proposal reviewer LLNL
- Proposal reviewer National Science Foundation (NSF)
- NSF Panelist NSF-CRCD, July 2000
- NSF Panelist NSF-IGERT, Sep 2000
- NSF Panelist NSF-REU, Jan 2001
- NSF Panelist NSF-REU, Jan 2002
- Hong Kong UGC Nanocenter reviews, Jan 2003 – special guest from HK Govt.

CONFERENCE ORGANIZER and CHAIRMAN

- 2006 ORGANIZER, DS&T General Session, S. Seal, J. Deen, 208th Electrochemical Soc. Meeting and XXI Congreso de la Sociedad Mexicana de Electroquímica, Cancun, Mexico. Oct 29-Nov 2.
- 2006 ORGANIZER, Seventh International Symposium on Chemical Mechanical Polishing, S. Seal, S. Beaudin, V. Desai, K. Sundaram, Y. Obeng, 208th Electrochemical Soc. Meeting and XXI Congreso de la Sociedad Mexicana de Electroquímica, Cancun, Mexico. Oct 29-Nov 2.
- 2006 ORGANIZER and SESSION CHAIR, Symposium KK – Education in Nanoscience and Nanotechnology, MRS Spring Meeting, Apr 17-21, San Fransisco, CA
- 2006 ORGANIZER, Surfaces and Interfaces in Nanostructured Materials II, 134 TMS Annual Meeting, San Antonio, TX.
- 2005 DIELECTRICS AND THE DIELECTRIC/ELECTROLYTE INTERFACE IN BIOLOGICAL AND BIOMEDICAL, APPLICATIONS: Organizers: D. Landheer, R. Bashir, S. Seal, J. Deen, O. Leonte, C.C. Liu, 208th Electrochemical Soc. Meeting, Los Angles, Oct 16-21, 2005.
- 2005 THERMAL AND PLASMA CVD OF NANOSTRUCTURES, Organizers: M. Sunkara, S. Seal, L. Delzeit, 208th Electrochemical Soc. Meeting, Los Angles, Oct 16-21, 2005.
- 2005 ORGANIZER, Surface Engineering in Materials Science III, TMS Annual Meeting, San Fransisco, CA
- 2005 INTERNATIONAL COMMITTEE, Nanomaterials Nanotechnologies NN 2005, Oct, Crete, Greece
- 2005 INTERNATIONAL COMMITTEE, PM 05-Powder Metallurgy for Automotive Components, India
- 2004 INTERNATIONAL COMMITTEE, Thermal Plasma of Nanomaterials, Pune, India
- 2004 ORGANIZER, Sensor Symposium AA, MRS Fall meeting, Dec, Boston, MA
- 2004 ORGANIZER, Surface Engineering Congress II, ASM International, Orlando, FI

IV. CANDIDATES RESUME

- 2004 ORGANIZER, International Conference in Nanotechnology, Calcutta, West Bengal, India
- 2004 ORGANIZER, BIOLOGICAL NANOSTRUCTURES, MATERIALS, AND APPLICATIONS, with M. Urquidi-Macdonald, P. Guo, 204th ECS Meeting – Hawaii, USA
- 2004 ORGANIZER, Student Poster, 205th ECS Meeting – San Antonio, TX
- 2004 ORGANIZER, Surfaces and Interfaces in Nanostructure Materials I, TMS Annual Meeting, March, Charlotte, NC
- 2003 Elected Committee Member, MRS International Research Council, (IRC), 2003, MRS.
- 2003 ORGANIZER, International Organizing Comt., NANO conference, Crete, Greece.
- 2003 ORGANIZER, How small can we go? SESMEC – FIU, Miami, FI
- 2003 ORGANIZER, Surface Engineering Congress, ASM International, Indianapolis, IL
- 2003 ORGANIZER, Surface Engineering in Materials Science II, TMS Annual Meeting, San Diego, CA
- 2003 ORGANIZER, Student Poster, 204th ECS Meeting – Orlando, FI
- 2003 ORGANIZER, AB1 - BIOLOGICAL NANOSTRUCTURES, MATERIALS, AND APPLICATIONS, with M. Urquidi-Macdonald, B. Rzigalinski, 204th ECS Meeting – Orlando, FI
- 2003 ORGANIZER, A2 - NANOTECHNOLOGY, 204th ECS Meeting – Orlando, FI
- 2003 ORGANIZER, Chemical Mechanical Polishing, 204th ECS Meeting – Orlando, FI
- 2003 ORGANIZER, A2 - NANOTECHNOLOGY, 203rd ECS Meeting – Paris, France
- 2003 ORGANIZER, S1 - Nanostructured Thin Films: New Routes to Advanced Materials and Applications (Chair), 203rd ECS Meeting – Paris, France
- 2003 ORGANIZER, A1 - General Society Student Poster Session (J.M. Fenton, S. Seal), 203rd ECS Meeting – Paris, France
- 2003 ORGANIZER – Committee, AVS Florida Chapter, UCF, Orlando 2003
- 2002 Member at Large Elect, ASSD, AVS Executive Comt.
- 2002 ORGANIZER, EMERGING TECHNOLOGY IN NANOELECTRONICS (Misra, Sundaram, Seal), 202nd ECS Meeting – Salt Lake City, Utah, Grand America and Little America Hotel, Oct 20-25 – WINTER OLYMPIC GAMES
- 2002 ORGANIZER, NANOTECHNOLGY (P. Kamat, S. Seal), 202nd ECS Meeting – Salt Lake City, UTah, Grand America and Little America Hotel, Oct 20-25 – WINTER OLYMPIC GAMES
- 2002 Office Elect, DS&T Comt. Membership Development, ECS
- 2002 ORGANIZER, NANOTECHNOLGY (P. Kamat, S. Seal), 201st ECS Meeting - Philadelphia, Pennsylvania, Philadelphia Marriott, ECS Centennial Meeting, May 12-17
- 2002 ORGANIZER, Dielectric science and technology/electronics: E1 - Fourth International Symposium on Chemical Mechanical Polishing (CMP) (S. Seal, R.L. Opila, C. Reidsma-Simpson, K.B. Sundaram, I Suni, H. Huff), 201st Meeting - Philadelphia, Pennsylvania, Philadelphia Marriott, ECS Centennial Meeting, May 12-17
- 2001 ORGANIZER, M. T. Swihart, M. D. Allendorf, M. Meyyapan, S. Seal, Fundamentals of gas phase and surface chemistry of vapor deposition, Cosponsors: Dielectric Science and Technology Division/ Electronics Division, Washington D.C., March
- 1999 – 2001 VICE CHAIRMAN, Surface Engineering Committee, MPMD, TMS
- 2000 ORGANIZER, R.L. Opila, C. Reidsma-Simpson, K.B. Sundaram and S. Seal G1 - Fourth international symposium on chemical mechanical polishing (CMP), Cosponsors: Dielectric Science and Technology Division/ Electronics Division, Phoenix, Oct 22-27th AZ
- 2000 ORGANIZER, Surface Engineering in Materials Science I, TMS Annual Meeting, Nashville, TN
- 2000 – 2003 Member Elect: Membership Development Comt. ASM International
- 2002 – 2004 Surface Engineering Task Force, ASM International
- 2002 – 2004 Technical Board Executive Comt., ASM International
- 2003 – 2004 MRS International Board, Materials Research Society
- 2004 Chair, Nanotechnology, NANO 2004, Kolkata, India
- 2003 Chair, CMP session, 204th ECS Meeting – Orlando, USA
- 2003 Chair, Nanotechnology session, 204th ECS Meeting – Orlando, USA
- 2003 Chair, Nanobio devices, 204th ECS Meeting – Orlando, USA
- 2003 Chair, High Temperature session, 204th ECS Meeting – Orlando, USA
- 2003 Chair, Plenary Session, Surface Engineering, Indianapolis, Sep 2003

IV. CANDIDATES RESUME

- 2003 Chair, S1 - Nanostructured Thin Films: New Routes to Advanced Materials and Applications (Chair), 203rd ECS Meeting – Paris, France
- 2003 Chair, Surface Engineering in Materials Science II, TMS Annual Meeting, San-Diego, CA, March
- 2002 Chair, MRS Nanosymposium, Fall meeting, Boston, MA
- 2001 Chair, Surface Engineering Committee, TMS 2002
- 2002 Chair, Nanomaterials for structural applications – MRS – Fall meeting, Boston-02
- 2002 Chair, EMERGING TECHNOLOGY IN NANOELECTRONICS (Misra, Sundaram, Seal), 202nd ECS Meeting – Salt Lake City, UTah, Grand America and Little America Hotel, Oct 20-25
- 2002 Chair, NANOTECHNOLOGY (P. Kamat, S. Seal), 202nd ECS Meeting – Salt Lake City, UTah, Grand America and Little America Hotel, Oct 20-25
- 2002 Chair, Surface Engineering, TMS Fall Meeting, Columbus, OH
- 2002 Chair, 13th International Federation for Heat Treatment and Surface Engineering Congress (IFHTSE) and the International Surface Engineering Congress (ISEC), 7-10 Oct, Columbus, OH
- 2002 Chair, Membership Comm. DS&T, Electrochemical Society
- 2002 Applied Surface Science Executive Committee: American Vacuum Society
- 2002 Membership at Large, ASSD: American Vacuum Society
- 2001 Chair, Coatings, 15th Int. ASM Conf. Surface Modification, Indianapolis
- 2001 Chair elected: Surface Engineering Sector, Indianapolis
- 2001 Chair, Surface Chemistry Symp, Washington, DC
- 2000 Chair, the Poster Session at 47th AVS, Boston, Materials Characterization, Oct 3rd
- 2000 Chair, Composites Session, ICCE/7, Denver, Co, July 2-8th
- 2000 Member of DS&T division of the ECS
- 2000 Chair, Surface Science Session, Florida AVS Conference, Spring
- 1999 Chair, Processing, characterization and Devices II, K3 electronics/Dielectric Science and Technology Joint General Session, S. Seal, R. K. Ulrich, ECS Conference, Oct 17-22, Hawaii
- 1999 Chair, Surface Science Session, Applied Surface Analysis Conference, WI
- 1999 Chair, Surface Science Session, Florida AVS Conference, Spring
- 1999 Member of the organizing committee of Applied Surface Analysis, WI
- 1998 Chair, Surface Science Session, Florida AVS Conference, Spring

SHORT COURSE INSTRUCTION

- 2006 Nanomaterials, Whirlpool, Michigan, USA
- 2005 Introduction to Nanomanufacturing and Nanotechnology, 12th Canadian Semiconductor Technology Conference, AVS, 15-19th Aug, Fairmont, Ottawa, Canada.
- 2005 Introduction to Nanomanufacturing and Nanotechnology, MS&T 05, TMS meeting, Pittsburgh, PA, Sep 24-28th 2005.
- 2004 Introduction to Nanomanufacturing and Nanotechnology, TMS Charlotte Annual March meeting
- 2002 Failure Analysis Using Surface Analytical Techniques, ASM, Cincinnati
- 2001 Fundamentals and Practices in CMP', ECS, San Francisco
- 2001 Failure Analysis Using Surface Analytical Techniques, ASM, Indianapolis
- 2001 Corrosion in Multiphase Oil and Gas Production – The use of corrosion inhibitors in Multiphase Pipelines", 9th Middle East NACE Corrosion Conference, Feb 12-14th 2001, Bahrain, Middle East
- 2000 Surface Analytical Techniques for Materials Engineers', ASM International, St. Louis, MO
- 2000 Fundamentals and Practices in CMP, ECS, Phoenix, AZ

IV. CANDIDATES RESUME

ADMINISTRATIVE SERVICE AT UCF

UNIVERSITY LEVEL

- 2006 Education Coordinator, Nanoscience and Technology Center
- 2006 AMPAC Director Search
- 2004 UCF mentoring of National Merit Scholars
- 2004 Nanoscience and Technology Center (NSTC)
- 2004 Nanodirector search committee
- 2001 UCF Nanoinitiative coordinator
- 2002 Co-Chair, Nanotechnology Commission
- 2001 Presidential Equipment Proposal Committee
- 2000 UCF Travel Committee
- 2000 UCF RESEARCH COUNCIL (Till 2003)
- 2001 UCF Presidential Equipment Grant Committee
- 2001 Distinguished Researcher of the Year Committee
- 2001 RIA Committee
- 2000 Presidential Equipment Proposal Committee
- 2000 Faculty Senate Assignment (Till 2002)

DEPARTMENT LEVEL

- 2002 AMPAC and MMAE Faculty Search Committee
- 2001 AMPAC Education Committee
- 2001 AMPAC Industrial Liaison Committee
- 2001 AMPAC Operational and Assessment Committee
- 2001 Library Committee Chair for the MSMSE program
- 2001 Faculty Search Screening Committee, Miniaturization, MAME
- 2000 Faculty Search Committee, Physical Metallurgy, AMPAC
- 2000 AMPAC Booth at IECC/7 Conf., July 2-8th, Denver, Co
- 2000 Faculty Search Screening Committee, AMPAC
- 2000 Chair: High Temperature Materials Search, AMPAC
- 2000 Polymers, Miniaturization Faculty Search, AMPAC
- 1999 Departmental laboratory development committee
- 1999 Departmental graduate brochure committee

IV. CANDIDATES RESUME

ADMINISTRATIVE SERVICE AND OFFICE HELD AT TECHNICAL SOCIETIES

- 2006-09 Chair, ASM Surface Engineering Sector
- 2005-08 TMS Bruce Chalmers Awards Committee
- 2005 - till Engineering Materials Achievement: ASM Awards Selection Committee
- 2004 Carl Wagner Subcommittee of the Electrochemical Society
- 2004 Chair, Symposium Comt. Of ECS DS&T
- 2003 Elected as a member: MRS International Advisory and Research Council
- 2003 USA Nanotechnology Expert review Team for Hong Kong Nanocenter
- 2003 Elected as Surface Engineering Task Force, ASM International
- 2003 Elected in the ASM Intl Technical Programming Board
- 2000 Chair, Membership Comt. DS&T, ECS
- 2001 Editor, Surface Engineering for JOM
- 2001 Chair, TMS Surface Engineering Committee
- 2000-06 ASM Membership Development Committee Office Elected
- 2001 Invited for the Surface Engineering Committee, AVS
- 2000 Invited for the Surface Engineering Committee, St Louis, ASM
- 2000 Invited for the Surface Engineering Committee, St Louis, TMS
- 1999 Career Development Chairman, NACE, Central Florida Section
- 1997 Secretary for ASM International, Central Florida Section

COMMUNITY SERVICE

- 2004 Training High School Teachers in Nanotechnology
- 2003 Training High School Teachers in Nanotechnology
- 2003 Training High School students in Research
- 2002 Judge for the Orange County High School Science Fair
- 2001 Judge for the Orange County High School Science Fair
- 2000 Orlando Science Center – Involving teachers/students in education
- 2000 Apopka High School, Apopka, FL – seniors in University Research
- 1999 University High School – delivering speeches on importance of education
- 1998 University High School – delivering speeches on importance of education
- 1998 Deltona High School – invited speaker for learning and education

COLLABORATORS

UNIVERSITIES

University of Wisconsin, University of Tennessee, Knoxville, University of Memphis, Princeton University, Florida International University, U Memphis, Rosewell Cancer Institute, Oklahoma Medical School, MUSU Medical School, Notredam University, PNNL, Imperial College of Science and Technology-UK, IIT-KGP, India, Orlando Medical Hospital, University of South Florida, Florida State University, Oak Ridge National Laboratory (ORNL), Stanford Linear Accelerator Center (SLAC), University of Cambridge, UK, University of Warsaw, University of Queensland, University of New South Wales, Sidney, University of California, Davis, Oklahoma Medical School, Notredam Animal Facility, PNNL Materials and Biotechnology Lab, MUSC – Medical School, NC, University of Sheffield and Cambridge, UK, Foundry Research Institute, Krakow, Poland,

IV. CANDIDATES RESUME

St. Petersburg, Russia, University of Groningen-Holland, NIMS-Tsukuba, AIST- Tsukuba and Nagoya, Tokyo University – Japan

NATIONAL LABORATORY

SLAC-Stanford, Oak Ridge National Laboratory (ORNL), Lawrence Berkeley National Laboratory, Pacific Northwest National Lab (PNNL), Naval Research Laboratory, National Academy of Science (Poland)

COLLABORATIVE EFFORT

- 2004 Nanoresearch at NIMS, AIST, Tsukuba and Nagoya, Japan
- 2001 Jan International Fellowship from University of Queensland, Australia.
- 2001 May International Collaboration with AMPAC and University of Queensland
- 2001 June International Collaboration with U New South Wales (Australia).
- 1999 May International Collaboration with University of Mining and Metallurgy, Krakow, Poland
- 1999 May International Collaboration with University of Chemistry, Warsaw, Poland
- 1999 May International Collaboration with FRI, Krakow, Poland
- 1999 Jun International Collaboration with IIT-KGP, India

VISITING ASSIGNMENTS

- 2004 Visiting Tokyo Institute of Technology, Japan
- 2004 Visiting AIST, Nagoya and Tsukuba, Japan
- 2004 Visiting University of Tokyo, Japan
- 2004 Visiting JSPS Fellow, NIMS, Tsukuba, Japan
- 2003 Visiting Nanoexpert review team to Hong Kong
- 2003 Visiting ASM-IIM fellow @ TIFR, BARC, IIT Bombay, NCL-Pune, IIT-Kharagpur
- 1999 May Visiting Faculty, University of Warsaw, Poland
- 1999 May Visiting Faculty, Foundry Research Institute
- 1999 May Visiting Faculty, Polish Academy of Science
- 1999 June Visiting Faculty, Indian Institute of Technology-Kharagpur, India
- 1997 May Visiting Researcher, Foundry Research Institute

STUDENT RELATED ACTIVITIES

- 2003 Faculty Advisor for the UCF AVS (American Vacuum Society) student Chapter
- 2002 ASM – Secretary Central Florida Chapter
- 2000 Faculty Advisor for UCF ECS (Electrochemical Society) student Chapter
- 1998 Faculty Advisor for Tau-Beta-Pi
- 1998 Faculty advisor for UCF MRS (Materials Research Society) student chapter
- 1997 Advisor for ISA and Sangam (Indian Student Association)
- 1997 Participating graduation ceremonies
- 1997 Regularly helped in organizing Engineering Open Houses
- 1997 Active in the UCF NACE committee

IV. CANDIDATES RESUME

JOURNAL PUBLICATIONS

(P E E R R E V I E W E D)

S U B M I T T E D (T o B e) O R U N D E R R E V I E W

1. A. Masunov, **S. Seal**, S. Gangopadhyaya, and K. Kudin, Hybrid DFT studies structure and properties of ceria nanoparticles I. Lattice parameter and bulk moduli", (2006).
2. E. Heckert, **S. Seal** and W. Self, "Radical induced DNA mediated by the rare earth metal cerium in vitro by a Fenton reaction", (2007).
3. D. R. Baer, J. E. Amonette, M. H. Engelhard, D. J. Gaspar, A.S.Karakoti, S. Kuchibhatla, P. Nachimuthu, J. T. Nurmi, V. Sarathy, **S. Seal**, P. G. Tratnyek, and C-M Wang, "Characterization Challenges for Nanomaterials" European Conference on Applications of Surface and Interface Analysis (ECASIA), Brussels(2007).
4. Z. Q. Wu, S. V. N. T Kuchibatla, C. M. Wang, L. V. Saraf, M. H. Englehard, V. Shuttananadan, S. Thevatsun and **S. Seal**, "Growth and structure of epitaxial Ce_{0.8}Sm_{0.2}O_{1.9} by oxygen plasma assisted molecular beam epitaxy", (J of Crystal Growth).
5. D. Sayle, B. Mangili, T. X. T. Sayle, A. Karakoti, S. Kuchibhatla, and **S. Seal**, "Crytallograpy with nanoparticles", (2007).

A C C E P T E D O R I N P R E S S

EDUCATION and NANOTECHNOLOGY

6. A. Sweeney, P. Vaidyanathan, **S. Seal**, "The promises and perils of nanoscience and nanotechnology: Exploring emerging social and ethical issues", *Bulletin of Science and Technology, An official journal of the National Association for Science, Technology & Society (NASTS)* 23(4), 236-245 2003.
7. A. Sweeney, P. Vaidyanathan and **S. Seal**, "Undergraduate Research and Education in Nanotechnology", *International Journal of Engineering Education IJEE*, Vol 22, No 1, 157-170, 2006.

NANOSCIENCE AND NANOTECHNOLOGY AND SURFACE ENGINEERING

8. K. Balani, T. Zhang, A. Karakoti, W. Li, **S. Seal** and A. Agarwal, "In situ carbon nanotube reinforcements in plasma sprayed aluminum oxide coatings", *Acta Materilia*, 2007.
9. A. Vincent, S. Babu and **S. Seal**, "Surface elastic properties of porous nanosilica coatings by scanning force microscopy", *Applied Physics Letters*, 91, 1, 2007.
10. A. Karakoti, S. Babu, S. Kuchibatla, and **S. Seal**, "Direct synthesis of nanoceria in aqueous Polyhydroxyl solutions", *J Phys Chem C*, (2007).
11. S. Shukla, P. Zheng, H. Cho, L. Ludwig and **S. Seal**, "Significance in electrode spacing in Hydrogen detection for tix oxide based MEMS sensor, *International Journal of Hydrogen Energy*, 2007.
12. V. Viswanathan, K. Rea, A. Vaidya and **S. Seal**, "Spray drying of nanoagglomerates on morphology evaluation in nanostructured APS coating", *J American Ceramic Society*, (2007).

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13. D. Deiz, N. Greenlatch, A. Sovlanki, A. Karakoti, and **S. Seal**, "Novel nanoscale ceria-platinum composite electrodes for direct methanol oxidation", *Catalyst Letters*, (2007)
14. Z. Wang, **S. Seal**, S. Patil and C. Zha, "Self driven quasi-hydrstavity and enhanced structural stability of ultrafine ceria", *J Physical Chemistry C, Letters*, (2007)
15. S. Patil, A. Sandberg, E. Heckert, W. Self and **S. Seal**, "Protein adsorption and cellular uptake of cerium oxide nanoparticles as a function of zeta potential", *Biomaterials*, 28(31), 4600-4607, 2007.
16. D. Bera, S. Kuchibatla, S. Azad, L. Saraf, C. M. Wang, V. Suthanandan, D. E. McCreedy, M. H. Engelhard, O. A. Marina, D. R. Baer, **S. Seal** and S. Thevatsun, "Growth and characterization of highly oriented Gd-foped CeO₂ (111) thin films on ZrO₂ (111)/Al₂O₃ (0001) substrates", *Thin Solid Films*, 2007.
17. S. Deshpande, A. Karakoti, G. Londe, H. Cho and **S. Seal**, "Room temperature hydrogen detection using 1-D nanostructured tin oxide sensor", *J of Nanoscience and Nanotechnology*, 2007.
18. K. Rea, V. Vishwanathan, J. DeHosson, S. O'Dell, T. McKechie, S. Rajagopalan, R. Vaidyanathan, and **S. Seal**, "Structure and property evaluation of a Vacuum Plasma Sprayed Nanostructured W-HfC Bulk Composite", *Materials Science and Engineering A*, 2007.
19. E. Brinley, S. Babu, and **S. Seal**, "The Solution Precursor Plasma Spray Processing of Nanomaterials", *JOM*, July Issue, 54-60, 2007.
20. S. Babu, A. Zadwiga, A. Velez, K. Wozniak, and **S. Seal**, "Electron paramagnetic study on the scavenging propeties of Ceria nanoparticles", *Chemical Physics Letters*, 442, 405-408, 2007.
21. C. Drake and **S. Seal**, "Band gap energy modification bserved in In Substituted nanocrystalline tin oxide", *Applied Physics Letters*, 90, 233117-1,3, 2007.
22. A. Vincent, E. Brinley, S. Babu, S. Deshpande, and **S. Seal**, "Role of catalyst in refractive index tenability of porous silica antireflective coatings by sol-gel technique", *Journal of Physical Chemistry C*, 111 (23), 8291-8298, 2007.
23. S. Reshenikov, S. Patil, M. Halder, **S. Seal** and S. K. Mallik, "Surface derivitized nanoceria with human carbonic anhydrase II Inhibitors and flurophores: A potential drug delivery device", *J of Physical Chemistry C*, 111 (24), 8437-8442, 2007.
24. C. Drake, A. Amalu, J. Bernard and **S. Seal**, "Enhancing the low temperature H sensitivity of nanocrystalline SnO₂ as a function of trivalent dopants", *J of Applied Physics*, 101, 104307-104314, 2007.
25. R. Theenaru, S. Patil, S. Deshpande and **S. Seal**, "Effect of trivalent rare earth dopants in nanocrystalline ceria coatings for high temperature oxidation resistance", *Acta Materilia*, 55, 3457-66, 2007.
26. D. Reid, A. Russo, R. Carro, M. Stephens, A. LePage, E. Peterson, T. Spallding and **S. Seal**, "Nanoscale additives tailor energetic reactions", *Nanoletters*, 7(7), 2157-2161, 2007.
27. S. Deshpande, P. Zheng, J. Cho, N. Posey and **S. Seal**, "Electrode architecture in tuning room temperature sensing kinetics of nano micro integrated H sensor", *Applied Physics Letters*, 90, 073118 (1-3), 2007. (also published in March 5, 2007 issue of, *Virtual Journal of Nanoscale Science & Technology*).
28. C. Korsvik, S. Patil, **S. Seal** and W. Self, "Vacancy engineered ceria oxide nanoparticles catalyze superoxide dismutase activity", *Chemical Communications*, 10, 1056-1058, 2007.

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29. S. Kuchibhatla, A. Karakoti, and **S. Seal**, "Hierarchical assembly of inorganic nanostructure building blocks to Octahedral superstructures: A True template free Self Assembly", *Nanotechnology*, 18(7), 075303-6, 2007.
30. M. Das, S. Patil, N. Bhargava, J. Kang, L. Ridell, **S. Seal** and J. Hickman, "Autocatalytic ceria nanoparticles offer neuroprotection in Adult Rat Spinal Cord Cells", *Biomaterials*, 28, 1918-1925, 2007.
31. W. Xiao, S. K. Hong, Z. Tang, **S. Seal** and J. Taylor, "Effect of varying blends of finished RO, Surface and Ground Waters on Solid Lead Surfaces", *Corrosion Science*, 49, 449-468, 2007.
32. V. Viswanathan, **S. Seal**, "High temperature oxidation behavior of Solution precursor plasma sprayed nanocerium coating on martensitic steel substrate", *J American Ceramic Society*, 90(3), 870-877, 2007.
33. V. G. Konakov, **S. Seal**, E. L. Solovieva, M. M. Pivovarov, S. N. Golubev, A. V. Shoroochov, "Influence of precursor dispersity and agglomeration on mechanical characteristics of 92ZrO₂-8Y₂O₃ ceramics", *Rev. Adv. Mat. Sci*, 11, 34-40, 2006.
34. T. Laha, S. Kuchibhatla, W. Li, **S. Seal** and A. Agarwal, "Interphasial phenomenon in thermally sprayed multiwalled carbon nanotube reinforced Aluminum nanocomposite", *Acta Materialia*, 55, 1059-1066, 2007.
35. C. Drake, S. Deshpande, S. Shukla, and **S. Seal**, "Detection of free carrier density and space charge layer variations in nano-oxides using FTIR", *Applied Physics Letters*, 89 (1), 143116-119, 2006.
36. J. Chen, S. Patil, **S. Seal** and J. McGinnis, "Rareearth nanoparticles prevent Retinal degeneration induced by intracellular peroxides", *NATURE Nanotechnology*, 1(2), 142-150, 2006.
37. A. Mehta, S. Patil, H. Bang, H. Cho, and **S. Seal**, "A novel multivalent nanomaterial based hydrogen peroxide sensor", *Sensors and Actuators A – Physical*, 134, 146-151, 2007.
38. **Invited:** P. Georgiva, R. Thorpe, A. Yanski, **S. Seal**, "Nanocomposite materials: An Innovative turnover for the Wire Arc Spraying technology", *International Journal of Thermal Spray and Surface Engineering*, Inaugural Issue, ITSS – ASM International, *Advanced Materials Processes – AMP*, Vol. Aug, 68-69, 2006.
39. E. Brinly, R. Folks, E. Braunstein, L. Kramer and **S. Seal**, High Efficiency SiO₂-TiO₂ Hybrid Sol-Gel antireflective for Infrared applications", *J Vac Sci Tech. A*, 24(4), 1141-1146, 2006.
40. M. Elbaccouch, S. Shukla, N. Mohajeri, A. Raissi, and **S. Seal**, "Microstructure analysis of a doped strontium cerate thin films membranes fabricated by polymer precursor technique", *Solid State Ionics*, 2006.
41. A. Karakoti, L. L. Hench and **S. Seal**, "Toxicity of Nanomaterials: Role of Surfaces", *JOM*, 58(7), 77-82, 2006.
42. **S. Seal** and N. B. Dahotre, "Surface Design and Effects in Biological Environment", *JOM*, 58(7), 51, 2006.
43. **Invited:** **S. Seal**, A. Karakoti, S. Kuchibhatla and D. Bera, "One-D nanostructures", *Progress in Materials Science*, 52, 699-913, 2007. (As of Mar 07, this article: **25 hottest article as selected by Progress in Materials Science**)
44. S. Patil, Y. Guo, A. Shulte, J. Norwood and **S. Seal**, "Role of trivalent La and Nd dopant in lattice distortions and O vacancy generation in cerium oxide nanoparticles", *Applied Physics Letters*, 88, 243110:1-3, 2006.

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45. A. Karakoti, R. Filmatier, S. Kuchibatla, A. Vincent, D. Bera and **S. Seal**, "Spiral growth of 1-D nanotubes using anodic oxidation", *J of Nanoscience and Nanotechnology*, 6(7), 2084-89, 2006.
46. **Invited: S. Seal**, C. Drake, D. Bera, S. Deshpande, "Metallic Nanostructured Materials for Sensors", *International Materials Review*, 52(5), 259-317, 2007.
47. **Invited: V. Vishwanathan**, T. Laha, K. Balani and A. Agarwal and **S. Seal**, "Challenges and Advances in Bulk Nanocomposite Fabrication", *Materials Science and Engineering Reports MSE-R*, 54(5-6), 121-285, 2006.
48. **Invited: S. Shukla**, Z. Rahman, J. Cho and **S. Seal**, "Art of In-situ Focussed Ion Beam HRTEM sample preparation from a nano-Micro Sensor Device", *Microscopy and Analysis*, 20(3), 9-11, 2006.
49. S. Shukla, V. Viswanathan, and **S. Seal**, "Thermal evaporation processing nano and sub micron tin oxide rods", *J Phys Chem B*, 110, 11210-11216, 2006.
50. Satyajit Shukla, Peng Zhang, Hyoung J. Cho, and **S. Seal**, "Room temperature hydrogen response kinetics of micro-nano integrated doped-tin oxide sensor", *Sensors and Actuators B*, 120(2), 573-578, 2006.
51. T. Sundarajan, S. Kuroda, J. Kawakita and **S. Seal**, "High temperature corrosion of nanocerium coated 9Cr-1Mo- Ferritic Steel in Air and Steam", *Surface Coatings and Technology*, 201, 2124-2130, 2006.
52. D. Bera, G. Johnston, H. Heinrich and **S. Seal**, "A parametric study on the synthesis of Carbon nanotubes through arc discharge in water", *Nanotechnology* 17, 1722-1730, 2006.
53. D. Bera, J. Phillepe, H. Heinrich and **S. Seal**, "Defect studies on as synthesized and purified carbon nanostructures produced by arc discharge in solution process", *J of Nanoscience and Nanotechnology*, Vol 6, 1084- , 2006.
54. R. Tarnuzzer, J. Colon, S. Patil, and **S. Seal**, "Vacancy Engineered Ceria nanostructures for protection from radiation induced cellular damage", *NANO LETTERS*, 5(12), 2573-2577, 2005.
55. S. D. Brown, M. Martin, S. Deshpande, **S. Seal**, K. Huang, E. Alm, Y. Yang, L. Wu, T. Yan, X. Liu, A. Arkin, K. Chourey, J. Zhou, and D. K. Thompson, "Cellular Response of *Shewanella oneidensis* to Nonradioactive Strontium Stress", *Applied and Environmental Microbiology*, 72(1), 890-900, 2006.
56. S. Shukla, E. Brinley, H. Cho and **S. Seal**, "Electrospinning of HPC polymer fibers and their application in inorganic micro and nano fiber synthesis", *Polymer*, 46(26), 12130-12145, 2005.
57. V. Vishwanathan, A. Agarwal, V. Ocelik, N. Sobczak, J. De. Hosson, and **S. Seal**, "The art of high energy density processing of a free form Ni-Alumina free form bulk nanocomposite", *Journal of Nanoscience and Nanotechnology*, 6, 651-660, 2006.
58. S. Shukla, L. Ludwig, J. Duarte, C. Drake, Z. Rahman, H. Cho and **S. Seal**, "A Hydrogen discriminating room temperature nanocrystalline doped tin oxide MEMS sensor", *Journal of Applied Physics*, 104306, 1-15, 2005.
59. S. Shukla, L. Ludwig, J. Duarte, C. Drake, Z. Rahman, H. Cho and **S. Seal**, "A Hydrogen discriminating room temperature nanocrystalline doped tin oxide MEMS sensor", *In the Issue of Virtual Journal of Nanoscience and Nanotechnology*, 12(23), Dec 5, 2005. (<http://scitation.aip.org/dbt/dbt.jsp?KEY=VIRT01&Volume=CURVOL&Issue=CURISS#MAJOR7>, also appeared in: *Journal of Applied Physics*, 104306, 1-15, 2005)
60. N. Dahotre and **S. Seal**, "Surface Engineering in Micro-Nanotechnology-Commentary", *JOM*, 57(12), 45, 2005.

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61. S. Kuchibhatla, A. Karakoti, and **S. Seal**, "Surface modification and colloidal stability-Overview", *JOM*, 57(12), 52-56, 2005.
62. K. Balani, G. Gonzalez, R. Hickman, A. Agarwal, S. O'Dell and **S. Seal**, "Synthesis, Microstructural and Mechanical Property evaluation of Vacuum Plasma Sprayed Tantalum Carbide", *American Ceramic Soc*, 89(4), 1419-1425, 2006.
63. R. Subastri, S. Deshpande, S. Seal, and T. Sinohara, Evaluation of performance of TiO₂-CeO₂ bilayer coatings as photoanodes for corrosion protection of copper", *Electrochemical and Solid State Letters*, 9(1), B1-B4, 2006.
64. S. Deshpande, S. Patil, S. Kuchibhatla and **S. Seal**, "Size dependency variation in lattice parameter and valency states in nanocrystalline ceria", *Applied Physics Letters*, 87, 133113:1-3, 2005.
65. T. Laha, K. Rea, T. McKechnie, **S. Seal** and A. Agarwal, "Synthesis of bulk nanostructured aluminum alloy component through vacuum plasma spray technique", *Acta Materiala*, 53(20), 5429-5438, 2005.
66. S. Shukla, L. Ludwig, J. Duarte, H. Cho and **S. Seal**, "Effect of air Pressure in Room Temperature sensing characteristics of a doped nano Tin oxide based H MEMS sensor", *J of Nanoscience and Nanotechnology*, 5(11), 1864-1874, 2005.
67. D. Bera, S. Patil, K. Scammon and **S. Seal**, "Diffusion limited growth of FTO nanofilm coated Tin Fractals", *Electrochemical and Solid State Letters*, 8(10), D31-D34, 2005.
68. K. Balani, A. Agarwal, **S. Seal** and K. Karthikeyan, "Transmission Electron Microscopy of Cold Sprayed 1100 Aluminum Coating", *Scripta Materilia*, 53(7), 845-850, 2005.
69. S. Soong, V. Vishwanathan, S. Deshpande, P. Georgiva, S. Patil, K. Rea, T. McKechnie and **S. Seal**, "Plasma spray formed bulk MoSi₂ nanocomposite", *J of Mat Sci and Eng. A*, 404(1-2), 165-172, 2005.
70. **Invited:** M. Meyyappan, S. Shukla and **S. Seal**, "Novel One Dimensional Nanostructures", *Interface*, 14(2), 41-45, 2005.
71. W. Li, Clara Rivero, A. Pope, S. Myneni, C. Lopez, A. Schulte, K. C. Richardson, **S. Seal**, H. Jain, K. Antoine, and A. C. Miller, "Role of S/Se ratio in chemical bonding of As-S-Se glasses investigated by Raman, XPS and EXAFS spectroscopies," *J Applied Physics*, 98, 053503, 1-11, 2005.
72. S. C. Kuiry, S. Deshpande, S. Patil and **S. Seal**, "Spontaneous Self Assembly of ceria nanoparticles to nanorods through supra-aggregate formation", *J. Phys. Chem B - Letters*, 109(15), 6936-6939, 2005.
73. D. Bera, S. C. Kuiry and **S. Seal**, "Templated Assisted Electrodeposition of Pd Nanoarrays: Preparation, Microscopic and Spectroscopic Studies", *J of Electrochemical Soc*, 152(8) C 566-570, 2005.
74. S. Gupta, P. Brower, S. Bandyopadhyay, J. Jain, R. Briggs, S. Patil and **S. Seal** " A TEM/AFM Investigation of Size and Surface Properties of nanoceria", *J Nanoscience and Nanotechnology*, 5(7), 1101-1107, 2005.
75. S. C. Kuiry, E. Megan, S. Deshpande, S. Patil and **S. Seal**, "A Novel Chemical Synthesis of One – Dimensional Nanostructures: Boehmite nanofibers and gama alumina nanorods", *J Phys Chem B Letters*, 109(15), 6936-6939, 2005.
76. S. C. Kuiry, S. Deshpande, Y. Obeng, **S. Seal**, "Elucidating Cu-complexation reactions in Cu-CMP", *Electrochemical and Solid State Letters*, 8(4), G98-101, 2005.

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77. D. Bera, E. Brinley, S. C. Kuiry, M. McCutchen, H. Heinrich and **S. Seal**, "An Optoelectronic Automated System for Carbon Nanotubes Synthesis using Arc Discharge in Solution Method", *Review of Scientific Instrumentation*, 76, 033903, 2005.
78. S. Shukla, L. Ludwig, J. Cho and **S. Seal**, "Effect of Ultraviolet Radiation Exposure on Room Temperature Hydrogen Sensitivity of Nanocrystalline Doped-Tin Oxide Sensor Incorporated into MEMS Device", *J of Applied Physics*, 97(1), 054307-054319, 2005.
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80. K. E. Rea, A. Agarwal, T. McKechnie and **S. Seal**, "An FIB and HRTEM of a single rapidly solidified hypereutectic Al-Si powder particle", *Microscopy Research Techniques*, 66 (1), 10-17, 2005.
81. S. Shukla and **S. Seal**, "Theoretical model for film thickness dependent gas sensitivity variation in nanocrystalline tin oxide sensor", *Sensor Letters*, 2(3), 260-264, 2004.
82. N. Dahotre and **S. Seal**, "Nanomaterials and Surfaces: Processing, Characterization to Applications", *JOM*, 35-36, 2004.
83. S. Shukla and **S. Seal**, "Mechanisms of Room temperature Metastable Tetragonal Phase Stabilization in Zirconia", *International Materials Review*, 50 (1), 1-20, 2005.
84. K. Balani, T. Laha, A. Agarwal, S. Patil and **S. Seal**, "Synthesis of Nanostructured Spherical Aluminum Oxide Powders by Plasma Engineering" *Materials and Metallurgical Transactions A.*, 36a (2), 301-309, 2005.
85. S. Shukla, C. Parrish, L. Ludwig, and **S. Seal**, "Inverse Catalyst Effect in low temperature sensors", *Sensors and Actuators B Chemical*, 104(2), 223-231, 2005.
86. T. Laha, A. Agarwal, T. McKechnie and **S. Seal**, "Synthesis and Characterization of Plasma Spray Formed Carbon Nanotube Reinforced Aluminum Composite", *Materials Science and Engineering A*, 381, 249-258, 2004.
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88. D. Bera, S. C. Kuiry, M. McCutchen, H. Heinrich, G. C. Slane & **S. Seal**, "In-Situ Synthesis of Carbon Nanotubes Decorated with Palladium Nanoparticles Using Arc-Discharge in Solution Method", *J of Applied Physics*, 96(7), 1-6, 2004.
89. S. Rana, S. Ram, **S. Seal** and S. K. Roy, "Surface structure and topology in surface stabilized Co-nanoparticles with a thin Al₂O₃ amorphous layer", *Journal of Applied Surface Science*, Vol - 236, 141-154, 2004.
90. S. Shukla and **S. Seal**, "Constitutive equation for the gas sensitivity for the nanocrystalline tin oxide sensor", *Sensor Letters*, 2, 1-6, 2004.
91. S. Patil, S. C. Kuiry and **S. Seal**, "Nanostructured Ceria for oxidation prevention of AISI 304 stainless steels", *Proceeding of the Royal Soc A – Engineering and Physical Sciences*, 460, 1-19, 2004.
92. V. Olesko, J. Howe, S. Shukla, and **S. Seal**, "High Resolution and Analytical TEM investigation of Metastable Tetragonal Phase Stabilization in undoped nanocrystalline zirconia", *J Nanoscience and Nanotechnology*, 4(7), 1-9, 2004.

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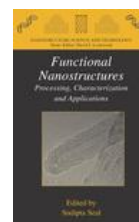
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2. **Invited: S. Seal**, Advanced materials for sensing", NATO Advanced Study Institute, Sensors for Environment Health and Security; Advanced Materials and Technologies, Vichy, France, 16-27 Sep, 07.
3. **Invited: S. Seal**, "Nanosensors", NATO Advanced Study Institute, Sensors for Environment Health and Security; Advanced Materials and Technologies, Vichy, France, Sep 07.
4. **Invited: S. Seal**, "Fundtional Nanostructures for Next Generation Applications", Nanotechnology Small Business Conf., April 12-13, Lockheed Martin, Orlando, FL 32816, 2007.
5. **Invited: S. Seal**, "On the nature of room temperature H sensing: EAGLE", 2007 Annual Joint Symposium Meeting, Florida Chapter of the AVS Science and Technology, UCF, Orlanod, FL, Mar 11-13, 2007.
6. **Invited: S. Seal**, J. McGinnis, J. Chen, S. Patil, "Nanoparticles as radical scavengers in preventing blindness in rats", Session, Nanomaterials for growth and applications in electronics, bio and photonics, TMS Annual Meeting, Orlando, FL, Feb 26, 9:40-10:05 am, 25 Feb – Mar 1, 2007.
7. **Invited: S. Seal**, "Engineered nanostructures for Enabling Technology", Multifunctional Nanomaterials, Nanostructures and Applications – MNNA 2006, 22-23 Dec 06, University of Delhi, Delhi, India, 2006.
8. **Invited: S. Seal**, C. Drake and S. Deshpande, "ITO nanostructures for sensors", 1st International Symposium in TCAOS, Session C5, Crete, Greece, Oct 23-25, 2006.
9. **Invited: S. Seal**, "Nanoparticles that clean the Environment can Extend your Life Span", RWTH-Aachen, Germany, 6 July, 06.
10. **Invited: S. Seal**, "Enabling Applications of Vacancy Engineered Nanostructures", Technical University of Munich, Garching – Munchen, Germany, 22 June 06.
11. **Invited: S. Seal**, "Multifaceted application of surface engineered nanoparticles", Nanotechnology and Engineering, 48th H. R. Bergmann Memorial Seminar, ASM International, ASM Chapter, Milwaukee, WI, 5th April, 2006.
12. **Invited: S. Seal**, "Application oriented nanostructures", Biomolecular Science Center, UCF, 16th March, 2006.
13. **Invited: S. Seal**, "Engineering Nanostructures for targeted applications", Washinton University at St.Louis, Washington, 24th Oct, 2005.
14. **Invited: S. Seal**, "Nanosensors and Nanomaterials", SRTI Workshop, NASA, Radisson at Port, Florida, 27-28th Sep, 2005.
15. **Invited: S. Seal**, "Engineered nanostructures with mixed valence states", NANOSTRUCTURED MATERIALS: ENERGY, ENVIRONMENTAL and SENSING APPLICATIONS, UEF Conference, (J. Allen, M. Baraton, E. Traversa, US Airforce, Univ. of Rome; Univ. of Limoges, France;), Barga, Italy, Sept 18-23, 2005.

IV. CANDIDATES RESUME

16. **Invited:** D. R. Baer, M. H. Engelhard, A. S. Lea, D. G. Gaspar, K. Pecher, C-M Wang, J. E. Amonette, A. A. El-Azab, S. Kuchibhatla, **Sudipta Seal**, "The Secret Life of Nanoparticles: characteristics of nanoparticles and nanostructured materials that are frequently forgotten or ignored", , Surface Interfaces in Nanostructured Materials-II, 2006 TMS Annual meeting, San Antonio, TX, Mar 12-16, 2006.
17. **Invited: S. Seal**, "Multifaceted industrial applications of surface modified nanoparticles and technology commercialization", 2nd Florida Tech Transfer Conference, Innovation, Partnership and Success, The FRC 2004 Tech Transfer Conference is produced by the Florida Research Consortium (FRC) and the Tampa Bay Technology Forum (TBTF) and will be held at the Hilton Walt Disney World on May 18th & 19th, Orlando, FL, 2005.
18. **Invited: S. Seal**, "Engineered nano-rare earth coatings for corrosion prevention", International Conference on Metallurgical Coatings and Thin Films (ICMCTF) in the session on *Nanostructured coatings and novel deposition strategies* in symposium H NEW HORIZONS IN COATINGS AND THIN FILMS. May 2-6, at San Diego, CA, 2005.
19. **Invited: S. Seal**, "Functional nanostructures for novel applications", NASA-KSC Corrosion Group (11 March 05), Space Biology Group (14 April 05), 2005.
20. **Invited: S. Seal**, "Fun with nanoceria", University of New South Wales, Sydney, Australia, A NSF USA-Australia collaboration, 10 Dec, 2004.
21. **Invited: S. Seal**, S. Shukla, J. Duarte, J. Cho, L. Ludwig, C. Parrish, and M. Meyyappan, "On the development of Room Temperature H sensor – Challenges and Solutions", *National Nanotechnology Initiative Grand Challenge Workshop – NASA and Office of Science and Technology*, Washington, DC, Located at San Jose, CA, Aug 24-26, 2004.
22. **Invited: S. Seal**, "Functional Nanostructures", *International Surface Engineering Congress*, Orlando, FL, Aug 2-4, 2004.
23. **Invited: S. Seal**, "Emerging applications of functional nanostructures", *NANO 2004 - India Nanotechnology Conference on Nanomaterials Synthesis, Characterization and Applications*, Kolkatta, India, 5-8 Nov, 2004.
24. **Invited:** P. Brower, S. Patil, **S. Seal**, S. Bandyopadhyay, "Effect of surfactant concentration on the size and surface roughness of ceria nanoparticles as studied by TEM and AFM", *NANO 2004 - India Nanotechnology Conference on Nanomaterials Synthesis, Characterization and Applications*, Kolkatta, India, 5-8 Nov, 2004.
25. **Invited: S. Seal**, "Functional nanostructures", NASA KSC Conference – FSGC STD Awardees Meeting, 20th July, 2004.
26. **Invited:** Satyajit Shukla, **Sudipta Seal**, Lawrence Ludwig, Clyde Parish, "Low Temperature Hydrogen Sensors, "2004 Florida AVS meeting, Orlando, Florida, March 2004.
27. **Invited:** S. Seal, "enabling applications of functional nanostructures", *Florida Tech Transfer Conference*, St Petersburg, Florida, 17-18th May, 2004.
28. **Invited: S. Seal**, "Multifaceted Applications of Wonder Nanoparticle (s)", *Florida Tech Transfer Conference*, St Petersburg, Florida, 17-18th May, 2004. (Poster)
29. **JSPS Fellow Invited Lecture: S. Seal**, Challenges in Bulk nanocomposite fabrication, Feb 2004 @ NIMS-Tsukuba Japan.
30. **JSPS Fellow Invited Lecture: S. Seal**, Nanoparticles and its emerging applications, Feb 2004 @ University of Tokyo, NIMS-Tsukuba, Tokyo Institute of Technology, Japan.

IV. CANDIDATES RESUME

31. **ASM IIM Invited Lecture: S. Seal**, Bulk nanocomposites, Bombay and Pune ASM Chapter, Dec 2003. (Involving, BARC, TIFR, IIT Bombay, U Pune, NCL and TCS).
32. **ASM IIM Invited Lecture: S. Seal**, Nanocereria: A journey started 13 yrs back, IIT KGP ASM Chapter, Dec 2003.
33. **Invited:** S. Kuiry; P. Georgieva; K. Rea; A. Agarwal; T. Mckechnie; S. O'Dell, **S. Seal**, "Bulk Composite Components Fabrication with Retained Nanostructure", Symp Q: Mechanical Properties of Nanostructured Materials and Nanocomposites, Fall meeting, MRS, Boston, 1-5 Dec 2003.
34. **Invited:** Y. Obeng, J. Ramsdell, K. Richardson, **S. Seal**, "Performance-Surface Characteristics of psiloQuest's Application Specific Pads for Chemical Mechanical Planarization", M1, "Sixth International Symposium on Chemical Mechanical Polishing", as a part of the 204th Meeting of The Electrochemical Society in Orlando, FL from October 12-October 16, 2003
35. **Invited: S. Seal**, S. V. Shukla, Vladimir P. Oleshko, James M. Howe, "Phase Stabilization in nanophase zirconia", NN 2003, Crete, Greece, Aug 2003.
36. **Invited:** S. Seal, "How small can we go?" SESMEC Conference, FIU, Miami, FL, March 2003.
37. **Invited:** J. Ramsdell, **S. Seal**, Y.S. Obeng, K.A. Richardson, "Characterization of Polyurethane Pads for Chemical Mechanical Planarization (CMP) using XPS, SSIMS, AFM, SEM, and Polishing Performance", SECOND INTERNATIONAL SYMPOSIUM ON INTERFACES IN POLYMER COMPOSITES; Nov 9-11, Orlando, FL, 2002.
38. **Invited: S. Seal**, "Engineered Surface Modified Nanomaterials and Phase Stabilization", (ID #61567), 13th International Federation for Heat Treatment and Surface Engineering Congress (IFHTSE) and the International Surface Engineering Congress (ISEC), Joint ASM-TMS Annual Conference, 7-10 October 2002, Columbus, Ohio USA.
39. **Invited: S. Seal**, S. V. Shukla, R. Viz, S. Bandyopadhyay, "TEM, Raman and AFM Studies of Polymer surfactant incorporated ceramic oxide Nanoparticles", NANO 2002, 17th – 21st May 02, Orlando, FL.
40. **Invited:** Y. Obeng, J. Ramsdell, S. Machinsky, H. Lu, K. Richardson and **S. Seal**, "Characterization of in-process degradation of polyurethanes CMP pads", 201st ECS Centennial meeting, May 12-17, Philadelphia, Pennsylvania, 2002.
41. **Invited: S. Seal**, "Novel Metallic, Sulfide, and Oxide Nanomaterials For Sensors, Electrodes, and Coatings", *Electrical Engineering and Computer Sciences Electronics Research Laboratory University of California at Berkeley*, 31st Aug 2001.
42. **Invited:** K. A. Richardson, A. Schulte, **S. Seal**, Villeneuve, T. Galstian, R. Vallé, T. Cardinal, M. Couzi and J. L. Brunéel, "Engineering Chalcogenide Glass Materials for Integrated Optics Applications", *Amorphous and Nanostructured Chalcogenides meeting, Romania, Who's Who in Chalcogenides*, June 25-28th, 2001.
43. **Invited: S. Seal**, W. Easter, K. Richardson, S. Ostapenko, V. Desai, W. Moreno, Chemical Mechanical Planarization: An Industry – University Research Initiative, *AVS Second International Conference on Microelectronics and Interfaces*, Convention Center, Santa Clara, CA, February 5-9, 2001.
44. **Invited: S. Seal**, (ICCE/7), SEVENTH ANNUAL INTERNATIONAL CONFERENCE ON COMPOSITES ENGINEERING, DENVER, COLORADO, USA, July 2-8, 2000, sponsored by International Community for Composites Engineering and UNO College of Engineering.
45. **Invited: S. Seal**, S. V. Shukla, "Application of XPS in Nanotechnology", *Surface Analysis*, 99, Wisconsin, USA, June 14- 17 1999.

IV. CANDIDATES RESUME

46. **Invited: S. Seal**, S. K. Roy, S. K. Bose and S. C. Kuiry, Role of rare earth oxide coatings in high temperature oxidation of austenitic steels, submitted *TMS Proceedings*, San Diego, CA, Feb 28th - Mar 4th, 1999.
47. **Invited: S. Seal**, A. Warwick, A. Garcia, J. Denlinger, T. L. Barr, B. P. Tonner, N. Sobczak, "Submicron Photoelectron Spectromicroscopy to Study Al-Ti-C Interface", **GORDON Research Conferences for ELECTRON SPECTROSCOPY**, New England College, 26-31st July, 1998.
48. D. Tamboli, A. Kale, **S. Seal**, V. Desai, "Studies on Passivation Behavior of Tungsten in Application to Chemical Mechanical Polishing", **GORDON Research Conferences for CORROSION**, Colby Sawyer College, 5-10th July, 1998.
49. **Invited: S. Seal**, T. L. Barr, D. Petering, J. Klinowski, "Understanding the cell/material interaction in relation to asbestos-type diseases by surface science methods", *26th Annual Symp. On Applied Vac. Sci. and Tech*, 16th Annual meet. Of the Florida Soc. For Microscopy, UCF, Orlando FL February 1998.
50. **Invited: T. L. Barr**, E. Hoppe, P. Shah, T. Ducall, **S. Seal**, "Application of photoelectron spectroscopy to practical non-conductive system", *26th Annual Symp. On Applied Vac. Sci. and Tech*, 16th Annual meet. Of the Florida Soc. For Microscopy, UCF, Orlando FL February 1998.
51. **Invited Poster: T. L. Barr S. Seal**, S. Krezoski and D. Petering, "Silica and Silicates - Are they really inert?" *In the Honor of Prof. Wolfgang M. H. Sachtleir's Distinguished career in Catalysis*, Argonne National Laboratory, IL, 14th May 1996.
52. **Invited: D. Petering, S. Seal**, S. Krezoski and T. L. Barr, "Iron and Oxidant Stress: Connections with Asbestos, Fibers, Cellular Iron Status and Metallothionein," *Biomarkers to Toxic and Carcinogenic Metals*, Park City, Utah, Mar 6th-10th, 1996.
53. **S. Seal**, S. C. Kuiry, S. K. Roy, S. K. Bose and T. L. Barr, "The effect of CeO₂ coatings on high temperature oxidation behavior of austenitic grades of stainless steel," **GORDON Research Conferences for CORROSION DRY**, New Hampshire, 16-21st July, 1995.
54. **Invited: T. L. Barr and S. Seal**, "Interaction of cells with the surfaces of pathogenic silicates", *Applied Surface Science Conf.*, Pennsylvania, June 6-9, 1995.
55. **Invited: Y. Obeng**, J. Ramsdell, S. Machinsky, H. Lu, K. Richardson and **S. Seal**, "Characterization of in-process degradation of polyurethanes CMP pads", *201st ECS Centennial meeting*, May 12-17, Philadelphia, Pennsylvania, 2002.
56. **Keynote: S. Bandyopadhyaya and S. Seal**, "Atomic Force Microscopy", *ENGMAT 2001: Engineering Materials 2001*, Melbourne, Australia, September 2001, The Institute of Engineering, Australasia.
57. **Invited: S. Seal**, A. Kale, D. Jimenez, V. Desai, K. Sundaram, N. Dahotre, "Novel synthesis, characterization and property evaluation of nanocrystalline Ti-Al-N thin films", **NOVEL SYNTHESIS AND PROCESSING OF NANOSTRUCTURED COATINGS FOR PROTECTION AGAINST DEGRADATION** (by: E. Lavernia, U/CA-Irvine; C. Berndt, SUNY-Stony Brook; J. Schoenung, U/CA-Irvine; H. Hahn, Darmstadt U. of Tech.; L. Kabacoff, ONR), Davos, Switzerland, August 12-17, 2001.
58. **Invited: S. Seal**, "Engineered Nanoparticles – Nanotechnology", *Materials Science and Engineering*, University of New South Wales, Sydney, Australia, June 8th, 2001.
59. **Invited: S. Seal**, "Probing polymer surfaces with soft x-rays", School of Physical Sciences – Center for Instrumental and Developmental Chemistry, *Queensland University of Technology, Brisbane Australia*, Room M303, Gardens Point, June 1st, 2001. (Under Queensland Fellowship Program)
60. **Invited: S. Seal**, "Engineered Nanoparticles – An overview", Chemistry Dept and BSAF Center, *University of Queensland, Brisbane Australia*, May 21st, 2001. (Under Queensland Fellowship Program)

IV. CANDIDATES RESUME

61. **Invited: S. Seal**, (ICCE/7), *SEVENTH ANNUAL INTERNATIONAL CONFERENCE ON COMPOSITES ENGINEERING*, DENVER, COLORADO, USA, July 2-8, 2000, sponsored by International Community for Composites Engineering and UNO College of Engineering.
62. **Invited:** Present scenario in Al-Ti alloys and thin films for industrial applications
- Chemistry Department, University of Warsaw, Poland.
 - Foundry Research institute, Cracow, Poland.
 - Academy of Mining and Metallurgy, Poland.
 - Department of Chemistry, Burdwan, India and Indian Institute of Technology, (IIT), KGP, India
 - (May and June 1999)
63. N. Sobczak, J. Sobczak, **S. Seal**, J. Morgiel, "TEM studies of the effect of titanium on structure and chemistry of Al/C", *European MRS Conference*, Poland, May 13- 18 1999.
64. **Invited: S. Seal**, A. S. Kale, K. R. Beaulieu, K. B. Sundaram, K. Casey, V. Desai, N. Sobczak, J. Morgiel, "Effect of deposition parameters on the microstructure of magnetron sputtered Ti-Al thin films", *European MRS Conference*, Poland, May 13- 18 1999.
65. **S. Seal**, T. Warwick, A. Garcia, H. Ade, J. Denlinger, B. Tonner, T. L. Barr, N. Sobczak, "Soft x-ray spectromicroscopy in application of material science problems", Invited Talk: *High Temperature Capillarity Conference*, Krakow, Poland, 29th Jun - 2nd July, 1997.
66. **Invited:** T. Warwick, H. Ade, S. Cerasari, J. Denlinger, A. Garcia, S. Hayakawa, A. Hitchcock, J. Kikuma, J. Kortright, M. Moronne, E. Rightor, E. Rotenberg, **S. Seal**, H-J. Shin, R. Steele and B. Tonner, "Scanning Zone-plate X-ray Microscopes for Materials Science Spectromicroscopy at the Advanced Light Source", *6th International Conf. on SRI*, Himeji, Japan, Aug 4-8, 1997.
67. **Invited: S. Seal**, "Interaction of cells with the surfaces of pathogenic silicates: An X-ray photoelectron study", *Chemistry Department, University of Warsaw*, Warsaw, 26th Oct, Poland, 1995.
68. **S. Seal**, N. Sobczak, S. J. Kerber, T. L. Barr and P. K. Rohatgi, "The study of the reactivity and interfaces in Al-Ti-C alloy system by XPS technique", *Cast Composites Conf.*, 16-18th October, Krakow, Poland, 1995.
69. **Invited: S. Seal** and T. L. Barr, "Application of XPS in composite interfaces": *Polish Academy of Science*, 21st Oct, Krakow, Poland, 1995.
70. **Invited: S. Seal**, S. K. Bose, S. K. Roy and M. Calliet, "Improvement in non-isothermal oxidation behavior of austenitic grade stainless steels by superficially applied cerium oxide coating," *3rd International Symposium on High Temperature Corrosion and Protection of materials*, Les EMBIEZ, France, 25-29 May, 1992.

IV. CANDIDATES RESUME

EXTENDED ABSTRACT PUBLICATIONS (REFEREED)

1. S. Shukla, **S. Seal**, L. Ludwig and C. Parish, "Improved H sensing of nanocrystalline doped tin oxide sensor at lower temperature, " *Proceedings of Surface and Interfaces in Nanostructures Materials and 5th Global Innovations Symposium: Trends in LIGA, Miniaturization, and Nano-scale Materials*", MPMD and 5th Global Innovations Proceedings, Warrendale, PA, 2003. ISBN: 0-87339-566-2), 379-381, 2004.
2. A. Saliminia, T. Galstian, A. Villeneuve, K. Richardson, A. Graham, C. Lopez, **S. Seal**, D. K. Verma, A. Shulte, "Polarization dependent surface photomodulation in As₂S₃ chalcogenide glass", *CLEO Conference* 5th – 8th May, San Francisco, Optical Society of America, 2000.
3. D. Tamboli, **S. Seal**, V. Desai, S. Joshi and G. Shinn, "Chemical Mechanical Polishing of Electroplated Copper", *Third International Symposium on Chemical Mechanical Polishing in IC Device Manufacturing, as a part of the 1999 Joint International Meeting of The Electrochemical Society in Honolulu*, October 17-22, 1999.
4. D. Tamboli, V. Desai, **S. Seal** and K. Sundaram, "Tungsten Dissolution Mechanism in Chemical Mechanical Planarization," *Third International Symposium on Chemical Mechanical Polishing in IC Device Manufacturing, as a part of the 1999 Joint International Meeting of The Electrochemical Society in Honolulu*, October 17-22, 1999.
5. S. Beverly, **S. Seal**, S. K. Hong, "Identification of Surface Chemical Functional Groups in Reverse Osmosis Membranes: An X-ray Photoelectron Spectroscopy Study", *Electroorganic and Electroanalytical Aspects of Environmental Chemistry, as a part of the 1999 Joint International Meeting of The Electrochemical Society in Honolulu*, October 17-22, 1999.
6. **S. Seal**, S. Krezoski, T. L. Barr, D. H. Petering and J. Klinowski, "Surface Modification of Chrysotile fibers During the Interaction With Murine Lung (L2) Cells: An ESCA Study", *Symposium for Biomaterial Surfaces*, 4th - 8th Sep'96, 77-78, Phoenix, AZ.
7. T. L. Barr, **S. Seal**, S. Krezoski and D. Petering, "Silica and Silicates - Are they really inert?" *In the Honor of Prof. Wolfgang M. H. Sachtler's Distinguished career in Catalysis*, 14th May'96, Argonne National Laboratory, IL, USA.
8. **S. Seal**, S. C. Kuiry, S. K. Roy, S. K. Bose and T. L. Barr, "The effect of CeO₂ coatings on high temperature oxidation behavior of austenitic grades of stainless steel," **GORDON Research Conferences for CORROSION DRY**, 16-21st July, 1995, New Hampshire, USA.

IV. CANDIDATES RESUME

AWARD WINNING PAPERS / PRESENTATION BY STUDENTS ADVISED BY DR. SEAL

1. C. Drake, S. Deshpande, L. Nguyen, S. Shukla, **S. Seal**, "Probing the defect chemistry of doped nanostructures tin oxide for sensor applications", 208th Electrochemical Soc, LA, CA, Oct 16-21, 2005. *General Poster Session*, (2nd Place – Cash Award)
2. P. Georgiva, S. Merchant, E. Vrotsos, K. Sugaya and **S. Seal**, "Application specific plasma sprayed ceria-zirconia composite", *ASM International Student Poster Competition – Central Florida Local Chapter*, 11th May, 2005. (1st Place – 500\$ award)
3. S. Patil, A. Mehta, H. Cho and **S. Seal**, "Nanoceria as radical sensor", *ASM International Student Poster Competition – Central Florida Local Chapter*, 11th May, 2005. (2nd Place – 300\$ award)
4. JP, D. Bera, E. Brinley, and **S. Seal**, "An Optoelectronic automated system for carbon nanotubes synthesis via arc-discharge in solution novel carbon nanotube setup", *UCF Undergraduate Research Forum (SURE)*, April 15th 2005 (2nd Place winner in Engineering and Computer Science and Optics).
5. E. Brinley, S. Shukla, C. Drake, J. Duarte, S. Deshpande, **S. Seal**, "FTIR Study of High Surface Area Nanomaterials for Gas Pollution Monitoring", *UCF Graduate Forum*, Mar 22nd 2005 (Best Poster 1st place, Engineering, Optics, Mathematics and Physical Sciences, Simulation and Modelling and other Centers)
6. D. Bera, E. Brinley, and **S. Seal**, "Optoelectronically automated system for carbon nanotube synthesis via Arc Discharge in solution", *UCF Engineering Expo*, Feb 22nd 2005. (Best Poster 1st Place, UCF Engineering Expo by Dean's Advisory Council)
7. V. Vishwanathan, S. Hong, K. Rea, S. Deshpande, S. Patil, P. Geogiva, T. McKechnie and **S. Seal**, "Plasma spray assembly of nanoparticles to near net shaped Bulk nanocomposites", *International Symposium of Research Students on Materials Science and Engineering*, IIT Madras, India, Dec 20th – 22nd, 2004. (Best Technical Paper Presentation Award and 50\$ cash prize)
8. D. Bera, S. C. Kuiry, **S. Seal**, "Fundamental insights into the kinetics and growth of the Pd nanocrystallites", 206th Meeting of The Electrochemical Society, Inc., 2004 Fall Meeting of The Electrochemical Society of Japan, with technical co-sponsorship of The Japan Society of Applied Physics, The Korean Electrochemical Society, and the Electrochemistry Division of the Royal Australian Chemical Institute, Honolulu, Hawaii, October 3-8, 2004. (ECS 2004 Electrodivision \$700 award – for one of the best paper selection)
9. D. Bera, M. McCutchen and **S. Seal**, "'Frosted" - SEM Micrograph of Fluorinated Tin Oxide Fractals", 2004 International Metallographic Society's International Metallographic Contest and Exhibit is being held in conjunction with their 38th annual convention in Honolulu, Hawaii, August 2005. (1st Place – Artistic Category 8)
10. D. Bera, S. Patil, K. Scammon, K. Rea and **S. Seal**, "Snow Flakes of Florida" - A study of Fluorine-doped Tin Oxide (FTO)", 2004 International Metallographic Society's International Metallographic Contest and Exhibit is being held in conjunction with their 38th annual convention in Honolulu, Hawaii, August 2005. (Honorable Mention – TEM Category 8)
11. D. Bera, S. Kuiry, M. McCutchen, and **S. Seal**, "Synthesis of Carbon Nanotubes Filled with Nanoparticles Using Arc Discharge in Solution", 205th Meeting of The Electrochemical Society, A2 – Nanotechnology, San Antonio, TX, May 9-May 14, 2004 (ECS 2004 DS&T Travel Grant Award to Bera – 600\$)
12. D. Bera, S. C. Kuiry, M. McCutche, S. Seal, "Functional C-nanotubes", Orlando, FL 2004 (1st Place, ASM-International Central Florida Chapter Graduate Paper Contest)

IV. CANDIDATES RESUME

13. Grady Slane – High School Student (**S. Seal** and D. Bera), Synthesis and characterization of CNTs, **Orange County Regional Science Fair (Ying Expo) Competition, FI (3rd in Chemistry section).**
14. Amit Patel – High School Student (**S. Seal** and S. Patil), synthesis and characterization of Fe@Ce core shell nanoparticles through microemulsion technique, **Regional and Orlando Science Fair Competition, FI (1st in Chemistry section).**
15. P. Georgieva, V. Viswanathan, S. C. Kuiry, A. Agarwal, K. Rea, J. De Hosson, T. McKechnie, S. Odell, **S. Seal**, "Development of metal-ceramic bulk nanocomposites with enhanced properties and important engineering applications", **AVS 2nd Place Award** - 2004 Annual Joint Symposium FI Chapter AVS, FSM, FI Section of AVS, (**Second Poster Prize** in Materials Science)
16. K.E. Rea, **S. Seal**, S.M. Schwarz, B. Kempshall, S. O'dell, T. McKechnie and A. Agarwal "Fishing in the Hole" In-situ Focused Beam Liftout for Transmission Electron Microscopic Analysis", International Metallographic Contest, ASM, 3-7 Aug 2003. (**Class 9: 3rd place poster award**).
17. V. P. Oleshko, J. M. Howe, S. V. Shukla, **S. Seal**, "CTEM, HRTEM and FE-AEM Investigation of the Metastable Tetragonal Phase Stabilization in Undoped, Sol-Gel Derived, Nanocrystalline Zirconia", Meeting of Microscopy Society of America, August, San-Antonio, TX, Aug 2003. (**Traveling Poster Exhibit Award in recognition for outstanding poster in the Physical Science category**)
18. K. Rea, **S. Seal** and A. Agarwal, "Retention of Nanostructures in Plasma Spray formed Hypereutectic Al-Si Alloy Bulk Components", 201st ECS Paris meeting, April 26 – May 3, Paris, France, 2003. (**DS&T Travel Award 600\$ to K. Rea**)
19. S. Patil, S. Shukla, S. C. Kuiry, D. Bera, **S. Seal**, "Nanophase zirconia for high sensitivity oxygen sensors", 2003 Joint Annual Symp., FSM and AVS, Mar 17-20, Orlando, FI, 2003. (**Poster Award: Honorable Mention**)
20. S. V. Shukla, **S. Seal** and R. Vanfleet, "Solgel derived zirconia nanoparticles", 2002 Joint Annual Symp., FSM and AVS, Mar 11-15, Orlando, FI, 2002. (**Poster Award: Honorable Mention**)
21. W. Li, **S. Seal**, and E. Megan, "Optical nanomaterials using solgel", NANO 2002, Orlando, FL. FSM and AVS, Mar 11-15, Orlando, FI, 2002. (**Poster Award: 2nd Place**).
22. W. Fei, S. C. Kuiry, **S. Seal**, K. Scammon, N. Quick, "High temperature oxidation of alloy fibers: a marker study", 201st ECS Centennial meeting, May 12-17, Philadelphia, Pennsylvania, 2002. (**High T Travel Grant 600\$ to Fei**)
23. W. Li, **S. Seal**, L. Lachal, E. Megan, "Optical nanomaterials via solgel", 201st ECS Centennial meeting, May 12-17, Philadelphia, Pennsylvania, 2002. (**DS&T Travel Grant 600\$ to Li and 300\$ to Megan**)
24. T. Smith, K. Sapre, **S. Seal** and P. Jepson, "Temperature stability of imidazoline for corrosion prevention of 1018 steel", 29th Annual Symposium Florida AVS, 19th Annual meeting of FSM and 23rd Annual Symposium Surface Analysis 2001, UCF, Orlando, March 12-15, 2001. (**HONORABLE MENTION to SMITH: AVS Florida and Surface Analysis 2001**)
25. L. Bracho, "Role of temperature and time in the surface oxidation chemistry of IN-738 superalloy performance of ceramic matrix composites for gas turbine applications," NACE Corrosion 2000, March 26-31, Orlando 2000. (Ack: **S. Seal**, V. Desai). (**3rd place to LEYDA; Marcel Pourbaix Award, T-8 Shell Oil: Best Poster Award**)
26. C. Wei, D. Tamboli, V. Desai, **S. Seal**, "Electrochemical characterization of copper and tantalum CMP, 3rd Annual Joint Meeting of the Florida Chapter of the Microscopy Society of America and the Florida Chapter of the American Vacuum Society", Orlando, Florida, March 2000. (**3rd place to WEI**)
27. K. Sapre, **S. Seal**, V. Desai, M. Gopal, S. Anders, P. Jepson, "Microstructural analysis of CO₂ corrosion in 1018 carbon steel: a multiphase flow study," 3rd Annual Joint Meeting of the Florida

IV. CANDIDATES RESUME

Chapter of the Microscopy Society of America and the Florida Chapter of the American Vacuum Society", Orlando, Florida, March 2000. (2nd place to KEDAR)

28. P. Varghese, S. Wannaparhun, V. Desai, **S. Seal**, S. K. Jha, "Studying the effect of high temperature and steam on mechanical properties of ceramic matrix composites for gas turbine application", 3rd Annual Joint Meeting of the Florida Chapter of the Microscopy Society of America and the Florida Chapter of the American Vacuum Society", Orlando, Florida, March 2000. (3rd Place to SURASAK)
29. K. Sapre, **S. Seal**, A. Kale, S. Shukla, L. Bracho, V. Desai, M. Gopal, P. Jepson, "Multifaceted Surface Topography in Multiphase Corrosion of C-Steel in Oil and Gas Lines," 32nd Annual Convention of the International Metallographic Society (IMS), 31 October - 3 November, Cincinnati, Ohio, 1999. (2nd: **Electron Microscopy, Scanning**)
30. A. Kale, "Oxidation behavior of polycrystalline Ti-Al thin films", NACE meeting, San Antonio, TX, April 1999. (2ND PLACE **Marcel Pourbaix Award to AJAY: Ack: S. Seal**, K. Sundaram).
31. D. C. Tamboli, "Investigations into chemical mechanical polishing of tungsten using various electrochemical and surface science techniques", NACE meeting, San Antonio, TX, April 1999. (1ST PLACE TO **TAMBOLI** Ack: **S. Seal**, V. Desai)
32. A. S. Kale, **S. Seal**, K. R. Beaulieu, K. B. Sundaram, K. Casey, V. Desai, N. Sobczak, J. Morgiel, "Fabrication of DC-Magnetron Sputtered 70Ti-30Al Thin Films", Florida AVS Chapter Meeting, Orlando Florida, March 1999. [**Hitachi 1st place award to AJAY, (cash + upto 1500\$ trip to a conference)**]
33. L. A. Bracho, **S. Seal**, V. Desai, "Study of Corrosion Failures Under Atmospheric Conditions", Florida AVS Chapter Meeting, Orlando Florida, March 1999. [**Honorable mention to LEYDA**]
34. K. R. Beaulieu, A. Kale, **S. Seal**, "Fracture and charging issues in AES", Florida AVS Chapter Meeting, Orlando Florida, March 1999. [**Honorable mention to KEVIN**]
35. S. Beverly, S. Shukla, S. Hong, **S. Seal**, "Identification of surface chemical functional groups in polymer membranes: An x-ray photoelectron spectroscopy study", Florida AVS Chapter Meeting, Orlando Florida, March 1999. [3rd place to **BEVERLY**]

IV. CANDIDATES RESUME

PRESENTATIONS AT NATIONAL AND INTERNATIONAL CONFERENCES

1. **Invited: S. Seal**, C. H. Baker, J. Colon, W. Jenkins, S. Babu, E. Griffo, "Nano rare earths for radiation protection", 12th Oct – Special Session, Radio-Biology, American Physical Soc, Division of Nuclear Physics Meeting, Newport News, VA, 11-13th Oct, 2007.
2. S. Kuchibatla, A. Karakoti, **S. Seal**, M. H. Engelhard, D. Baer, S. Thevatsun, "Cerium oxide nanoparticles: Distinguishing influences of size from chemical or environmental effects, 54th AVS International Symposium, 14-19th October, Seattle, WA, 2007.
3. **S. Seal**, C. H. Baker, J. Colon, and E. Griffo, "Nano rare earths for radiation protection", 2007 of the Annual meeting of Division of Nuclear Physics – American Physical Society", Newport News, VA, 10-13 Oct, 2007.
4. D. R. Baer, J. E. Amonette, M. H. Engelhard, D. J. Gaspar, A.S.Karakoti, S. Kuchibatla, P. Nachimuthu, J. T. Nurmi, V. Sarathy, **S. Seal**, P. G. Tratnyek, and C-M Wang, "Characterization Challenges for Nanomaterials" European Conference on Applications of Surface and Interface Analysis (ECASIA), Brussels(2007).
5. S. Kuchibatla, P. Nachimutu, C. M. Wang, M. Shuttanadan, M. Engelhard, L. V. Saraf, S. Thevutsan, and **S. Seal**, "Optimization the structure and composition of heterostructured ceria/zirconia multilayers through O plasma assisted MBE, 54th AVS International Symposium, 14-19th October, Seattle, WA, 2007.
6. **Invited: S. Seal**, "Advanced materials for sensing", NATO Advanced Study Institute, Sensors for Environment Health and Security; Advanced Materials and Technologies, Vichy, France, 16-27 Sep, 07.
7. **Invited: S. Seal**, "Nanosensors", NATO Advanced Study Institute, Sensors for Environment Health and Security; Advanced Materials and Technologies, Vichy, France, Sep 07.
8. C. Drake and **S. Seal**, "Prescreening of nanomaterials for enhanced gas sensor applications", 2007 NANO DDS, Primary Session Area: III(A1) Engineered Nanoparticles for Enhanced Device & Sensor Functionality, Nanoelectronic Device for Defense and Security Conf, Crystal City, Washington, DC, 18-21 June, 2007.
9. S. Deshpande and **S. Seal**, "A Low energy room temperature hydrogen detector", 2007 NANO DDS, Primary Session Area: III(A1) Engineered Nanoparticles for Enhanced Device & Sensor Functionality, Nanoelectronic Device for Defense and Security Conf, Crystal City, Washington, DC, 18-21 June, 2007.
10. S. Deshpande, P. Zheng, , H. Cho and **S. Seal**, "A low temperature H sensor: Nano-Micro Integration", NSTI Nanotech 2007, Santa Clara, May 20-24, CA, USA
11. **Invited: S. Seal**, "Fundtional Nanostructures for Next Generation Applications", Nanotechnology Small Business Conf., April 12-13, Lockheed Martin, Orlando, FL 32816, 2007.
12. A. Karakoti, S. Kuchibatla, S. Deshpande, S. Babu and **S. Seal**, "Effect of OH groups on the stability of oxiation state of ceria nanoparticles", MRS Spring meeting, Apr 9-13, San Fransisco, CA, 2007.
13. S. Kuchibatla, A. Karakoti, M. Engelhard, D. Baer, S. Thevutsan and **S. Seal**, "Probing and tuning the structure and chemistry of ceria nanoparticles", MRS Spring meeting, Apr 9-13, San Fransisco, CA, 2007.
14. S. Deshpande, A. Vincent and **S. Seal**, "Evolution of surface chemistry and topographical variation during E-CMP", MRS Spring meeting, Apr 9-13, San Fransisco, CA, 2007.

IV. CANDIDATES RESUME

15. **Invited: S. Seal**, "On the nature of room temperature H sensing", 2007 Annual Joint Symposium Meeting, Florida Chapter of the AVS Science and Technology, UCF, Orlando, FL, Mar 11-15, 2007.
16. **Invited: S. Seal**, J. McGinnis, J. Chen, S. Patil, "Nanoparticles as radical scavengers in preventing blindness in rats", Session, Nanomaterials for growth and applications in electronics, bio and photonics, 136th TMS Annual Meeting, Orlando, FL, Feb 26, 9:40-10:05 am, 25 Feb – Mar 1, 2007.
17. S. Babu and **S. Seal**, "Synthesis and nonlinear properties of PbS Quantumdots", 136th TMS Annual Meeting, Orlando, FL, Feb 26, 25 Feb – Mar 1, 2007.
18. D. Reid, E. Petersen, and **S. Seal**, "Synthesis and characterization of nano Al energetic particles", 136th TMS Annual Meeting, Orlando, FL, Feb 26, 25 Feb – Mar 1, 2007.
19. A. Vincent, E. Brinley, S. Babu, A. Karakoti and **S. Seal**, "Tunable refractive index anti reflection nanosilica coatings via solgel acid and base catalyzed chemistry", 136th TMS Annual Meeting, Orlando, FL, Feb 27, 25 Feb – Mar 1, 2007.
20. A. Karakoti, H. Koeplin, J. Schneider and **S. Seal**, "Tunability of anodized titania nanotubes: Role of Stress and current – Potential fluctuations", 136th TMS Annual Meeting, Orlando, FL, Feb 27, 25 Feb – Mar 1, 2007.
21. R. Theenaru, S. Patil and **S. Seal**, "Doping effects on nanocerium coatings for high temperature oxidation resistant coatings", 136th TMS Annual Meeting, Orlando, FL, Feb 28, 25 Feb – Mar 1, 2007.
22. V. Venkatachalapathy and **S. Seal**, "Optimization of plasma spray parameters for achieving nanostructured coatings using CFD", 136th TMS Annual Meeting, Orlando, FL, Feb 28, 25 Feb – Mar 1, 2007.
23. S. Kuchibatla, A. Karakoti, R. Theenaru, **S. Seal**, D. Baer, T. Thevunathan, "Time and temperature dependant morphological evolution of nanocrystalline cerium oxide" 136th TMS Annual Meeting, Orlando, FL, Feb 28, 25 Feb – Mar 1, 2007.
24. **S. Seal**, R. Tarnuzzer, S. Patil and J. Colon, "Vacancy engineered cerium oxide nanoparticles for protection from radiation induced cellular damage", 136th TMS Annual Meeting, Orlando, FL, Feb 28, 25 Feb – Mar 1, 2007.
25. A. Vincent, S. Babu, S. Deshpande and **S. Seal**, "In-situ electrochemical investigation of nanocerium conversion coated Al alloys by EC-AFM", 136th TMS Annual Meeting, Orlando, FL, Feb 28, 25 Feb – Mar 1, 2007.
26. C. Drake and **S. Seal**, "Nanosensors - Fundamentals", 136th TMS Annual Meeting, Orlando, FL, Feb 26, 25 Feb – Mar 1, 2007.
27. S. Deshpande and **S. Seal**, "Nanosensors - Application" 136th TMS Annual Meeting, Orlando, FL, Feb 26, 25 Feb – Mar 1, 2007.
28. **Invited: S. Seal**, "Engineered nanostructures for Enabling Technology", Multifunctional Nanomaterials, Nanostructures and Applications – MNNA 2006, 22-23 Dec 06, University of Delhi, Delhi, India, 2006.
29. J. Arevalo, D. MacNevin, E. Stone, S. Deshpande, R. Vaidya, **S. Seal** and J. Taylor, "Effect of TiO₂ coating on membrane fouling and mass transfer: A lab-scale study", Membrane, Research on Sustaining Water Quality, FSAWWA Conf., 26-30 Nov, Sea World, Orlando, FL, 2006.
30. S. Deshpande, A. Karakoti, G. Londe, H. Cho and **S. Seal**, "Fabrication of tin oxide nanowires based nano-micro sensor for room temperature detection of hydrogen", AVS 53rd International Symp., San Francisco, 12-17 Nov, 2006.

IV. CANDIDATES RESUME

31. **Invited: S. Seal**, C. Drake and S. Deshpande, "ITO nanostructures for sensors", 1st International Symposium in TCAOS, Session C5, Crete, Greece, Oct 23-25, 2006.
32. S. Deshpande, A. Vincent and **S. Seal**, "Insitu determination of electrolyte composition and voltage modulation effect on E-CMP of Copper", 8th Chemical Mechanical Planarization - 210th Meeting of The Electrochemical Society XXI Congreso de la Sociedad Mexicana de Electroquímica, Cosponsored by the Sociedad Iberoamericana de Electroquímica, Cancun, Mexico, Oct 29-Nov 3, 2006.
33. **S. Seal**, "Nanoparticles that clean the Environment can Extend your Life Span", RWTH-Aachen, Germany, 6 July, 06.
34. **S. Seal**, "Enabling Applications of Vacancy Engineered Nanostructures", Technical University of Munich, Garching – München, Germany, 22 June 06.
35. M. A. Stephens, R. V. Carro, A. R. LePage, A. S. Powell, T. E. Sammet, J. C. Arvanetes, **S. Seal**, D. L. Reid, and E. L. Petersen, "AP/HTPB-based solid propellant mixtures with tailored burning rates", 31st International Symposium in Combustion, Aug 6-12, Heidelberg, Germany.
36. **Invited: S. Seal**, "Nanoparticles that clean the environment expands the life span of cells", RWTH-Aachen, Germany, July 8, 2006.
37. P. Zheng, S. Deshpande, S. Seal, and H. Cho, "Fast detection of H₂ at room temperature using a energy efficient nanoparticle integrated micro sensor", IEEE Sensors, Daejeon, Korea, Oct 22-26, 2006.
38. D. Milanova, R. Kumar, S. VNT Kuchibhatla, and **S. Seal**, "Heat transfer of nano-oxide suspensions in pool boiling", ASME Int Conf on Nanochannels, Microchannels and Minichannels, June 06 in Limerick, Ireland.
39. J. Chen, S. Seal, and J. McGinnis, "Inorganic nanoparticles prevents blindness in rats", 2006 ARVO Meeting – Neuroprotection and Apoptosis, Ft. Lauderdale, FL, Apr 30-4th May, 2006.
40. **S. Seal**, "Multifaceted application of surface engineered nanoparticles", Nanotechnology and Engineering, 48th H. R. Bergmann Memorial Seminar, ASM International, ASM Chapter, Milwaukee, WI, 5th April, 2006.
41. Clovis A. Linkous, David H. Schleith, **S. Seal** and S. Patil, Catalytic Quenching of Hydrogen Peroxide via Ceria Nanoparticle Dispersions, 209th Electrochemical Society Meeting, May 7-12, Adams Mark Hotel, Denver, CO, 2006.
42. **S. Seal**, "Multimodal nanoparticles", NC State, Raleigh, NC, 31 March, 2006.
43. D. Hummel and **S. Seal**, "Exploring the bubble: Producing CNTs with an underwater arc discharge", SURE, UCF, 30 Apr, 2006.
44. L. Nguyen, S. Kuchibhatla and **S. Seal**, "Assessment of the apparent proliferative effect induced by ceria nanoparticles in human keratinocytes", SURE, UCF, 30 Apr, 2006.
45. N. Blanco, W. Self and **S. Seal**, "Synthesis and characterization of core-shell nanocerium by low cost, room temperature, environmentally friendly wet chemical synthesis route", SURE, UCF, 30 Apr, 2006.
46. P. Burke, K. Sugaya and **S. Seal**, "Adult stem cells and nanotechnology: Combined in bone replacement", SURE, UCF, 30 Apr, 2006.
47. A. Powell, E. Petersen and **S. Seal**, "Research on high burn rate solid rocket propellant using nanoparticle additive", SURE, UCF, 30 Apr, 2006.

IV. CANDIDATES RESUME

48. A. Amalu, C. Drake, D. Bernard and **S. Seal**, "Analysis of nanostructured In-SnO₂ sensors' response to H₂ as a function of various In dopants", *2006 Annual Joint Symposium Florida AVS and Florida Society of Microscopy (FSM)*, Mar 12-16, UCF, Orlando, FL, 2006. (**Award: Honorable Mention**)
49. D. Bernard, A. Amalu, C. Drake and **S. Seal**, "Nanocrystalline doped SnO₂ and CeO₂ for its prompt recovery as a Low temperature H sensor", *2006 Annual Joint Symposium Florida AVS and Florida Society of Microscopy (FSM)*, Mar 12-16, UCF, Orlando, FL, 2006.
50. S. VNT Kuchibhatla, D. Milanova, S. Patil, S. Deshpande, K. E Rea, R. Kumar, and **S. Seal**, "TALK: Interaction of nanofluids with heat transfer surface", *2006 TMS Annual Meeting*, San Antonio, Mar 12-16, 2006.
51. Satyanarayana VNT Kuchibhatla, A. Karakoti, R.Thanneru, and **S. Seal**, "POSTER: Evaluation of optical and electronic properties in nanocrystalline cerium oxide using UV – VIS spectroscopy", *2006 TMS Annual Meeting*, San Antonio, Mar 12-16, 2006.
52. C. Drake, S. Deshpande, L. Nguan, D. Bernard, S. Shukla, and **S. Seal**, "Nanocrystalline doped SnO₂ for Room T detection of Hydrogen: Response, Recovery and Sensitivity Improvments", *2006 Spring National AICHE Meeting*, Orlando, FL, Apr 23-27, 2006.
53. A. Masunov, **S. Seal**, and S. Gangopadhyay, "Stability and Composition of ceria nanoparticles", *2006 Spring National AICHE Meeting*, Orlando, FL, Apr 23-27, 2006.
54. E. Petersen and **S. Seal**, "Research on nanoparticle additives for HTPB/AP-Based Composite Solid Propellants", *2nd Eaglin Symposium on Nano Energetics*, Feb 22 – 23, Eglin AFB, FL.
55. S. Shukla, M. Elabauch, **S. Seal** and A. Raissi, "Effect of temperature and spin-coating cycles on microstructure evolution for tb-substituted srceO₃ thin membrane films", *International Conference and Exposition on Advanced Ceramics and Composites, Americal Ceramic Society*, 22-27 Jan, Cocoa Beach, Florida, USA, 2006. ISBN: XXXX, pp xx-xx.
56. S. Shukla, E. Brinley; H. J. Cho and **S. Seal**, "Polymer Fiber Assisted Processing of Ceramic Oxide Nano and Submicron Fibers", 27 Jan, *30th International Conference and Exposition on Advanced Ceramics and Composites, Americal Ceramic Society*, 22-27 Jan, Cocoa Beach, Florida, USA, 2006.
57. K. Rea, A. Kruize; S. O' Dell; T. McKechnie; S. Rajagopalan; R. Vaidyanathan; and **S. Seal**, "Nanoscaled Hafnium Carbide Strengthening Mechanisms of a Tungsten Monolithic Component Synthesized by Vacuum Plasma Forming", Wed Jan 25, *30th International Conference and Exposition on Advanced Ceramics and Composites, Americal Ceramic Society*, 22-27 Jan, Cocoa Beach, Florida, USA, 2006.
58. M. M. Elbaccouch, S. Shukla; N. Mohajeri; **S. Seal**; A. T-Raissi, "Polymer Precursor Route to Perovskite-Type Tb-Substituted SrCeO₃ Thin Membrane Films and Effects of Microstructure Evolution", Tue Jan 24, *30th International Conference and Exposition on Advanced Ceramics and Composites, Americal Ceramic Society*, 22-27 Jan, Cocoa Beach, Florida, USA, 2006.
59. V. Venkatachalapathy, K. R. Filmlalter; K. Rea; S. Patil and **S. Seal**, "High Temperature Oxidation Behavior of Stainless Steels Coated with Nano Ceria Using Solution Plasma Spray ", Jan 25, *30th International Conference and Exposition on Advanced Ceramics and Composites, Americal Ceramic Society*, 22-27 Jan, Cocoa Beach, Florida, USA, 2006.
60. S. Patil, A. Mehta; H. Bahng; H. Cho and **S. Seal**, "Regenerative Biosensor of Rare Earth Oxide Nanomaterial for Free Radical Detection", Jan 26, *30th International Conference and Exposition on Advanced Ceramics and Composites, Americal Ceramic Society*, 22-27 Jan, Cocoa Beach, Florida, USA, 2006.

IV. CANDIDATES RESUME

61. S. Deshpande, S. Patil, S. Kuchibatla and **S. Seal**, "Size Dependency Variation in Lattice Parameter and Valency States in Nanocrystalline Cerium Oxide", Jan 25, *30th International Conference and Exposition on Advanced Ceramics and Composites, Americal Ceramic Society*, 22-27 Jan, Cocoa Beach, Florida, USA, 2006.
62. P. Georgieva, R. Thorpe; A. Yanski; E. Motyka and **S. Seal**, "Science of the Nano-Steel Coatings, Wire Arc Technology and State of Art Characterization", Jan 25, *30th International Conference and Exposition on Advanced Ceramics and Composites, Americal Ceramic Society*, 22-27 Jan, Cocoa Beach, Florida, USA, 2006.
63. D. Bera, K. Filmlalter; S. Patil and **S. Seal**, "Diffusion Limited Growth of Fluorinated Tin Oxide-Nanofilm Coated Tin Fractals during Anodization", Jan 26, *30th International Conference and Exposition on Advanced Ceramics and Composites, Americal Ceramic Society*, 22-27 Jan, Cocoa Beach, Florida, USA, 2006.
64. C. H. Drake, S. Deshpande; L. Nguyen; S. Patil; S. Shukla and **S. Seal**, "Controlling Defect Chemistry by Processing in Doped Nanostructured Tin Oxides for Sensor Applications", Jan 26, *30th International Conference and Exposition on Advanced Ceramics and Composites, Americal Ceramic Society*, 22-27 Jan, Cocoa Beach, Florida, USA, 2006.
65. P. Georgieva, E. Brinley; S. Merchant; E. Vrostos; K. Sugaya and **S. Seal**, "Free Form Bulk Nanocomponents for Biomedical Applications", Jan 26, *30th International Conference and Exposition on Advanced Ceramics and Composites, Americal Ceramic Society*, 22-27 Jan, Cocoa Beach, Florida, USA, 2006.
66. K. E. Rea and **S. Seal**, "Controlling the Density of Bulk Nanocomposite Components Using Thermodynamic Relations of Spray-dried Nano-Agglomerate Ceramic Feedstock Powder", Jan 26, *30th International Conference and Exposition on Advanced Ceramics and Composites, Americal Ceramic Society*, 22-27 Jan, Cocoa Beach, Florida, USA, 2006.
67. V. Venkatachalapathy and **S. Seal**, "Plasma Processing - A Tool for Nanostructure Retention", Jan 27, *30th International Conference and Exposition on Advanced Ceramics and Composites, Americal Ceramic Society*, 22-27 Jan, Cocoa Beach, Florida, USA, 2006.
68. M.J. Correll, H.J. Cho, A. Mehta, S. Patil, **S. Seal**, R.A. Bucklin, "A Nanomaterial Sensor for Monitoring H₂O₂ in Plants Grown in Low Atmospheric Pressure", *American Society of Space and Gravitational Biology (ASGSB) meeting*, Biotechnology/Instrumentation section, Nov 2005.
69. S. V. Satyanarayana, **S. Seal**, D. Baer, L. Sharaf, V. Stanandan, S. Thevuthasan, "Fabrication of doped ceria zirconia vertical layer structures for fuel cell applications using glancing angel deposition and spin coating", *MRS*, Fall 2005, nov 29-Dec 3, Boston, MA, 2005.
70. S. Patil, A. Mehta, H. Bahn, J. Cho and **S. Seal**, "A Novel nanomaterial based electrochemical sensor for free radical detection", *ASME-05*, Nov 11-15, Orlando, FL, 2005.
71. P. Zhang, S. Shukla, L. Ludwig, J. Cho and **S. Seal**, "A Room temperature hydrogen sensor with high selectivity and sensitivity using semiconductor nanoparticles", *ASME-05*, Nov 11-15, Orlando, FL, 2005.
72. C. Drake, S. Deshpande, L. Nguyan, S. Shukla, **S. Seal**, "Probing the defect chemistry of doped nanostructures tin oxide for sensor applications", *208th Electrochemical Soc*, LA, CA, Oct 16-21, 2005. (2nd Place)
73. **Invited: S. Seal**, "Nanosensors and Nanomaterials", *SRTI Workshop, NASA, Radisson at Port*, Florida, 27-28th Sep, 2005.

IV. CANDIDATES RESUME

74. **Invited: S. Seal**, "Engineered nanostructures with mixed valence states", *NANOSTRUCTURED MATERIALS: ENERGY, ENVIRONMENTAL and SENSING APPLICATIONS*, UEF Conference, (J. Allen, M. Baraton, E. Traversa, US Airforce, Univ. of Rome; Univ. of Limoges, France;), Barga, Italy, Sept 18-23, 2005.
75. **Invited: S. Seal**, "Functional nanostructures for Novel Applications", *2nd Florida Tech Transfer Conference, Innovation, Partnership and Success*, www.flatechtransfer.org, The FRC 2004 Tech Transfer Conference is produced by the Florida Research Consortium (FRC) and the Tampa Bay Technology Forum (TBTF) and will be held at the Hilton Walt Disney World, on May 18th & 19th, Orlando, FL, 2005.
76. Jennifer L. Small, Matthew A. Stephens, Sameer Deshpande, Eric L. Petersen, and **Sudipta Seal**, *Burn Rate Sensitization of Solid Propellants Using a Nano-Titania Additive*, *20th International Colloquium on the Dynamics of Explosion and Reactive Systems – Paper ID no 150*
<http://www.icders.mcgill.ca/venue.html>, McGill, Montreal, Canada, 31 Jul – 4th Aug, 2005.
77. S. Brown, K. Chourey, **S. Seal**, S. Deshpande, J. Zhou, D. Thompson, "Transcripton analysis of *Shewanella Oneidensis* MR-1 shocked with hexavalent Cr", 105th General Meeting, American Society of Microbiology, 5-9th June, 2005.
78. S. V. Satyanarayana, S. Patil, and **S. Seal**, "Self assembly to star shaped engineered oxide nanostructures for high temperature applications", *207th Meeting of The Electrochemical Society, Inc.*, 2005, Quebec, Canada, May 15-20th, 2005.
79. P. Georgiva, S. Merchant, E. Vrotsos, K. Sugaya and **S. Seal**, "Application specific plasma sprayed ceria-zirconia composite", *ASM International Student Poster Competition – Central Florida Local Chapter*, 11th May, 2005
80. S. Patil, A. Mehta, H. Cho and **S. Seal**, "Nanoceria as radical sensor", *ASM International Student Poster Competition – Central Florida Local Chapter*, 11th May, 2005
81. P. Georgieva, V. Viswanathan, S.J. Hong, K. Rea and **S. Seal**, Plasma Spray Formed Near-Net-Shape Nanocomposites, Poster Presentation at the 2005 NSTI Nanotechnology Conference and Trade Show, May 8-12, 2005, Anaheim, California, U.S.A.
82. S. Deshpande, S. Patil, S. Satyanarayana, and **S. Seal**, "A novel nanoparticle additive for enhanced performance Cu-CMP", *207th Meeting of The Electrochemical Society, Inc.*, 2005, Quebec, Canada, May 15-20th, 2005.
83. J. Chen, **S. Seal**, S. Patil, S. A. Sezate, M. Ramsey, R. Elias, L. Wong, W. Cao, J. F. McGinnis, "Nanoceria Particles Confer Neuroprotection in Retinal Cells in vitro", *The Association for Research in Vision and Ophthalmology-ARVO*, May 1-5, Fort Lauderdale, FL, 2005.
84. J. Duarte, S. Shukla, S. Patil, **S. Seal**, "Microemulsion derived Ba and Sr – cerate thin films and particulates for gas sensing applications", *SURE – UCF Undergraduate Research Forum*, May 14th, UCF, Orlando, FL.
85. JP, D. Bera, E. Brinley, and **S. Seal**, "An Optoelectronic automated system for carbon nanotubes synthesis via arc-discharge in solution novel carbon nanotube setup", *UCF Undergraduate Research Forum (SURE)*, April 15th 2005 (**2nd Place winner in Engineering and Computer Science and Optics**).
86. **Invited: S. Seal**, "Engineered nano-rare earth coatings for corrosion prevention", International Conference on Metallurgical Coatings and Thin Films (ICMCTF) in the session on *Nanostructured coatings and novel deposition strategies* in symposium H *NEW HORIZONS IN COATINGS AND THIN FILMS*. May 2-6, at San Diego, CA, 2005.

IV. CANDIDATES RESUME

87. E. Brinley, S. Shukla, C. Drake, J. Duarte, S. Deshpande, **S. Seal**, "FTIR Study of High Surface Area Nanomaterials for Gas Pollution Monitoring", *UCF Graduate Forum*, Mar 22nd 2005 (**Best Poster 1st place, Engineering, Optics, Mathematics and Physical Sciences, Simulation and Modelling and other Centers**)
88. D. Bera, E. Brinley, and **S. Seal**, "Optoelectronically automated system for carbon nanotube synthesis via Arch Discharge in solution", *UCF Engineering Expo*, Feb 22nd 2005. (**Best Poster 1st Place, UCF Engineering Expo by Dean's Advisory Council**)
89. **Invited: S. Seal**, "Functional nanostructures for novel applications", NASA-KSC Corrosion Group (11 March 05), Space Biology Group (14 April 05), 2005.
90. **S. Seal**, "A REU site, RET and NUE program at UCF on Nanotechnology", *Engineering and Computer Grantee Meeting: National Science Foundation*, Renaissance Washington, DC, February 16-18, 2005.
91. D. Bera, and **S. Seal**, "A Novel Synthesis Method of Carbon Nanotubes and Nanoparticles Decorated Carbon Nanotubes and Its Parametric Study Using Arc-discharge in Solutions", *Graduate Research Forum, UCF Pegasus Ball Room*, March 22, 2005.
92. E. Brinley, S. Deshpande and **S. Seal**, "FTIR Study of High Surface Area Nanomaterials for Gas Pollution Monitoring", *Graduate Research Forum, UCF Pegasus Ball Room*, March 22, 2005.
93. S. Patil, and **S. Seal**, "A Regenerative Biosensor of H₂O₂ based on Rare Earth Oxide nanomaterial", *Graduate Research Forum, UCF Pegasus Ball Room*, March 22, 2005.
94. K. Rea, and **S. Seal**, "Agglomeration of Oxide Nanoparticles for Development of Near Net Shaped Nanostructured Bilk Components", *Graduate Research Forum, UCF Pegasus Ball Room*, March 22, 2005.
95. S. Shukla, L. Ludwig, H. Cho, **S. Seal**, "Nano-micro integrated highly sensitive room temperature Hydrogen sensor", *Applied Surface Analysis 05, 2005 Annual Joint Symposium of Florida Chapter of AVS, Florida Society of Microscopy*, March 13-17, 2005, UCF, Orlando, FL.
96. D. Bera, E. Brinley, G. Johnston and **S. Seal**, "Parametric Study of CNT synthesis using Arc Discharge in Solutions", *Applied Surface Analysis 05, 2005 Annual Joint Symposium of Florida Chapter of AVS, Florida Society of Microscopy*, March 13-17, 2005, UCF, Orlando, FL.
97. S. Deshpande, S. Patil, V. Satyanarayana and **S. Seal**, "A Novel Nanoparticle Additive for Enhanced Copper CMP performance", *Applied Surface Analysis 05, 2005 Annual Joint Symposium of Florida Chapter of AVS, Florida Society of Microscopy*, March 13-17, 2005, UCF, Orlando, FL.
98. S. Patil, A. Mehta, H. Cho and **S. Seal**, "A Rare Earth Baed Regenerative Biosensor for H₂O₂ detection", *Applied Surface Analysis 05, 2005 Annual Joint Symposium of Florida Chapter of AVS, Florida Society of Microscopy*, March 13-17, 2005, UCF, Orlando, FL.
99. **Invited: S. Seal** and J. Cho, "Functional Nanostructures: Its application to Coatings, Biotechnology, Sensors and Intergrated Devices", Rogers Hall, Agricultural and Biological Engineering, University of Florida, 25 March, 2005.
100. **S. Seal**, "An International Research and Education program: UCF-USA and UNSW-Australia", *Engineering and Computer Grantee Meeting: National Science Foundation*, Renaissance Washington, DC, February 16-18, 2005
101. **Invited: S. Seal**, "Fun with nanoceria", University of New South Wales, Sydeny, Australia, A NSF USA-Australia collaboration, 10 Dec, 2004.

IV. CANDIDATES RESUME

102. S. Shukla, L. Ludwig, J. Duarte, R. Agarwal, J. Cho, **S. Seal**, "Nano-micro integrated highly sensitive room temperature detector", 2005 Annual Joint Symposium FI Chapter AVS, FSM, Applied Surface Science, March 2005.
103. A. Sweeney, P. Vaidyanathan and **S. Seal**, "Social & Ethical Dimensions of Research in Nanoscale Science and Technology" *Hawaii International Conference on Education*, Honolulu, Hawaii, January 4-7, 2005.
104. S. Shukla and **S. Seal**, "A Constitutive Equation for Semiconducting Oxides Thin Film Gas Sensors", *29th International Conference on Advanced Ceramics & Composites, S5 - Emerging Sensor Technologies Based on Electroceramics*, Cocoa Beach, FL, 23rd – 27th Jan, 2005.
105. S. Shukla, L. Ludwig, J. Cho, R. Agarwal, J. Duarte and **S. Seal**, "Photodeactivity Room Temperature Gas Sensitivity of Nanocrystalline Doped Tin Oxide Sensor," *29th International Conference on Advanced Ceramics & Composites, S5 - Emerging Sensor Technologies Based on Electroceramics*, Cocoa Beach, FL, 23rd – 27th Jan, 2005.
106. M. M. Elbaccouch, S. Shukla, N. Mohajeri, **S. Seal**, and Ali T-Raissi, Characterization of Spin-Coated Terbium-Doped Strontium Cerate Thin Film Membranes, *29th International Conference on Advanced Ceramics & Composites, S5 - Emerging Sensor Technologies Based on Electroceramics*, Cocoa Beach, FL, 23rd – 27th Jan, 2005.
107. S. Shukla, L. Ludwig, J. Cho, R. Agarwal, J. Duarte and **S. Seal**, "Room Temperature Hydrogen Gas Sensitivity of Nanocrystalline Doped Tin Oxide Sensor Under UV Light", *134th TMS Annual Meeting, Functional Thin Film for Sensors*, San Francisco, CA March, Feb 13th – 17th, 2005.
108. S. Hong, V. Vishwanathan, K. Rea, S. Deshpande, S. Patil, P. Geogiva, T. McKechnie and **S. Seal**, "Plasma spray formed near net shape MoSi₂ + Si₃N₄ nanocomposite", *134th TMS Annual Meeting, Surface Engineering in Materials Science III*, San Francisco, CA March, Feb 13th – 17th, 2005.
109. S. Gupta, S. Bandyopadhyay, P. Brouwer, S. Patil, R. Briggs and **S. Seal**, "Characterization of the Surface Properties of Ceria Nanoparticles using Atomic Force Microscope", *134th TMS Annual Meeting, Surface Engineering in Materials Science III*, San Francisco, CA March, Feb 13th – 17th, 2005.
110. **Invited: S. Seal**, S. Shukla, J. Duarte, J. Cho, L. Ludwig, C. Parrish, and M. Meyyappan, "On the development of Room Temperature H sensor – Challenges and Solutions", *National Nanotechnology Initiative Grand Challenge Workshop – NASA and Office of Science and Technology*, Washington, DC, Located at San Jose, CA, Aug 24-26, 2004.
111. V. Vishwanathan, S. Hong, K. Rea, S. Deshpande, S. Patil, P. Geogiva, T. McKechnie and **S. Seal**, "Plasma spray assembly of nanoparticles to near net shaped Bulk nanocomposites", *International Symposium of Research Students on Materials Science and Engineering, IIT Madras, India*, Dec 20th – 22nd, 2004.
112. S. Shukla and **S. Seal**, "A Novel Single Crystal Model Semiconducting Oxide Thin Film Sensors", *134th TMS Annual Meeting, Functional Thin Film for Sensors*, San Francisco, CA March, Feb 13th – 17th, 2004.
113. S. Shukla, L. Ludwig, J. Cho, J. Duarte and **S. Seal**, "Effect of UV radiation on Room Temperature Gas sensitivity of Nanocrystalline doped Tin oxide sensor incorporated into MEMS device", *Semiconductor Materials for Sensors, Symp A, MRS Fall Meeting*, 29th Nov – 3rd Dec, 2004.
114. S. Shukla, L. Ludwig and **S. Seal**, "A Novel Theoretical Model for Semiconducting Oxide Gas Sensors", *Materials for Sensors, Symp A, MRS Fall Meeting*, 29th Nov – 3rd Dec, 2004.
115. **S. Seal**, "Functional Nanostructures", *International Surface Engineering Congress*, Orlando, FL, Aug 2-4, 2004.

IV. CANDIDATES RESUME

116. D. Bera, **S. Seal**, S. Azad, C.M. Wang, V. Shutthanandan, D.E. McCready, M.H. Engelhard, S. Thevuthasan, "Growth and Characterization of Highly Oriented Pure and Gd₂O₃ doped CeO₂(111) on ZrO₂(111)/Al₂O₃(0001) system", *Solid State Ionics, MRS Fall Meeting*. Boston, 29th Nov – 3 Dec, 2004.
117. **S. Seal**, "Fun with ceria at ultrafine domain", PNNL, 28-29th June, 2004.
118. D. Bera, M. McCutchen and **S. Seal**, "'Frosted" - SEM Micrograph of Fluorinated Tin Oxide Fractals", *2004 International Metallographic Society's International Metallographic Contest and Exhibit is being held in conjunction with their 38th annual convention in Honolulu, Hawaii, August 2005*.
119. D. Bera, S. Patil, K. Scammon, K. Rea and **S. Seal**, "Snow Flakes of Florida" - A study of Fluorine-doped Tin Oxide (FTO)", *2004 International Metallographic Society's International Metallographic Contest and Exhibit is being held in conjunction with their 38th annual convention in Honolulu, Hawaii, August 2005*.
120. **Invited: S. Seal**, "Functional nanostructures", NASA KSC Conference – FSGC STD Awardees Meeting, 20th July, 2004.
121. S. Shukla, C. Parrish, J. Duarte and **S. Seal**, "Functional nanostructure membranes for space exploration" NASA KSC Conference – FSGC STD Awardees Meeting, 20th July, 2004.
122. D. Bera, **S. Seal**, "Templated assisted Pd nanoarrays", *26th Annual Symposium on Applied Surface Analysis (Surface Analysis 04)*, William R. Wiley Environmental Molecular Sciences Laboratory, Richland, Washington, USA. June 15-18, 2004.
123. S. Deshpande, S. C. Kuiry, and **S. Seal**, "Surface modified tungsten particles for space applications", *206th Meeting of The Electrochemical Society, Inc., 2004 Fall Meeting of The Electrochemical Society of Japan, with technical co-sponsorship of The Japan Society of Applied Physics, The Korean Electrochemical Society, and the Electrochemistry Division of the Royal Australian Chemical Institute, Honolulu, Hawaii, October 3-8, 2004*.
124. D. Bera, S. C. Kuiry, **S. Seal**, "Fundamental insights into the kinetics and growth of the Pd nanocrystallites", *206th Meeting of The Electrochemical Society, Inc., 2004 Fall Meeting of The Electrochemical Society of Japan, with technical co-sponsorship of The Japan Society of Applied Physics, The Korean Electrochemical Society, and the Electrochemistry Division of the Royal Australian Chemical Institute, Honolulu, Hawaii, October 3-8, 2004*.
125. **Invited: P. Brower, S. Patil, S. Seal**, S. Bandyopadhyay, "Effect of surfactant concentration on the size and surface roughness of ceria nanoparticles as studied by TEM and AFM", *NANO 2004 - India Nanotechnology Conference on Nanomaterials Synthesis, Characterization and Applications, Kolkatta, India, 5-8 Nov, 2004*.
126. **Invited: S. Seal**, "Emerging applications of functional nanostructures", *NANO 2004 - India Nanotechnology Conference on Nanomaterials Synthesis, Characterization and Applications, Kolkatta, India, 5-8 Nov, 2004*.
127. **Invited: S. Seal**, "Multifacted Applications of Wonder Nanoparticle (s)", *Florida Tech Transfer Conference, St Petersburg, Florida, 17-18th May, 2004. (Poster)*
128. **Invited: S. Seal**, "Enabling applications of functional nanostructures", *Florida Tech Transfer Conference, St Petersburg, Florida, 17-18th May, 2004*.
129. E. Petersen, S. Deshpande, S. C. Kuiry, S. Patil and **S. Seal**, "Soot reduction using nanoparticles", *30th International Combustion Conferenc-* <http://www.combustion2004.org/>, Illionois, Chicago, July 25th – 30th, 2004.

IV. CANDIDATES RESUME

130. A. Rajnikant, S. Shukla, L. Ludwig, C. Parish, J. Cho and **S. Seal**, "A nanoparticle based microsensor for room temperature hydrogen detection", *IEEE Sensors 2004: The 3rd IEEE International Conference on Sensors 2004-Oct-24 - 2004-Oct-27*, Vienna, Austria.
131. D. Bera, S. Kuiry, M. McCutchen, and **S. Seal**, "Synthesis of Carbon Nanotubes Filled with Nanoparticles Using Arc Discharge in Solution", 205th Meeting of The Electrochemical Society, A2 – Nanotechnology, San Antonio, TX, May 9-May 14, 2004.
132. S. Patil, S. C. Kuiry, B. Rzigalinski, and **S. Seal**, "Emerging Applications of Nanocrystalline Cerium Oxide", *MRS Spring Meeting*, San Francisco, April 2004.
133. D. Bera, S. C. Kuiry, M. McCutchen, **S. Seal**, "Functional C-nanotubes", *ASM-International Central Florida Chapter*, Orlando, FL 2004.
134. Amit Patel – High School Student (**S. Seal** and S. Patil), synthesis and characterization of fe@ceria core shell nanoparticles through microemulsion technique, *Regional and Orlando Science Fair Competition*, FL.
135. A. Agarwal, S. Patil, T. Laha, **S. Seal**, "Plasma Engineered Nanostructured Spherical Powders". *Symposium Name: Surface and Interfaces in Nanostructures Materials, and 5th Global Innovations Symposium: Trends in LIGA, Miniaturization, and Nano-scale Materials, Devices and Technologies 2004 TMS Annual Meeting*, Charlotte, NC.
136. S. Shukla, **S. Seal**, L. Ludwig, C. Parish, "Improved Hydrogen Sensing Characteristics of Nanocrystalline Doped Tin Oxide Sensor at Lower Temperature", *Symposium Name: 5th Global Innovations Symposium: Trends in LIGA, Miniaturization, and Nano-scale Materials, Devices and Technologies 2004 TMS Annual Meeting*, Charlotte, NC.
137. **Invited:** S. Shukla, **S. Seal**, L. Ludwig, C. Parish, "Low Temperature Hydrogen Sensors, "2004 Florida AVS meeting, Orlando, Florida, March 2004.
138. P. Georgieva, V. Viswanathan, S. C. Kuiry, A. Agarwal, K. Rea, J. De Hosson, T. McKechnie, S. Odell, **S. Seal**, "Development of metal-ceramic bulk nanocomposites with enhanced properties and important engineering applications", 2004 Annual Joint Symposium FI Chapter AVS, FSM, FI Section of AVS.
139. S. Shukla, **S. Seal**, L. Ludwig, C. Parish, "Low Temperature Hydrogen Sensing Behavior of Nanocrystalline Doped Tin Oxide Sensor", *28th International Cocoa Beach Conference and Exposition on Advanced Ceramics and Composites*, sponsored by The American Ceramic Society, Cocoa, Florida, Jan 2004.
140. **Invited:** S. Kuiry; P. Georgieva; K. Rea; A. Agarwal; T. McKechnie; S. O'Dell, **S. Seal**, "Bulk Composite Components Fabrication with Retained Nanostructure", *Symp Q: Mechanical Properties of Nanostructured Materials and Nanocomposites*, Fall meeting, MRS, Boston, 1-5 Dec 2003.
141. P. Georgieva; **S. Seal**; S. Kuiry, *Computation of Mechanical Properties of Nanostructured Materials Symp Q: Mechanical Properties of Nanostructured Materials and Nanocomposites*, Fall meeting, MRS, Boston, 1-5 Dec 2003.
142. V. Oleshko; J. Howe; S. Shukla; **S. Seal**, "High-resolution Analytical Electron Microscopy Investigation of Metastable Tetragonal Phase Stabilization in Undoped, Sol-gel Derived Zirconia Nanoceramics", *Symp L, Continuous Nanophase and Nanostructured Materials, Fall meeting*, MRS, Boston, 1-5 Dec 2003.
143. K.E. Rea, **S. Seal**, S.M. Schwarz, B. Kempshall, S. O'dell, T. McKechnie and A. Agarwal "Fishing in the Hole" In-situ Focused Beam Liftout for Transmission Electron Microscopic Analysis", *International Metallographic Contest*, ASM, 3-7 Aug 2003.

IV. CANDIDATES RESUME

144. V. P. Oleshko, J. M. Howe, S. V. Shukla, **S. Seal**, "CTEM, HRTEM and FE-AEM Investigation of the Metastable Tetragonal Phase Stabilization in Undoped, Sol-Gel Derived, Nanocrystalline Zirconia", *Meeting of Microscopy Society of America*, August, San-Antonio, TX, Aug 2003.
145. R. Fry, A. Clarke, S. Patil, S. C. Kuiry, **S. Seal**, B. Rzigalinski, "Engineered Oxide Nanoparticles Increase Neuronal Lifespan In Culture And Act As Free Radical Scavengers symposium A1, "Student Poster Session", as a part of the 204th Meeting of The Electrochemical Society in Orlando, FL from October 12-October 16, 2003.
146. W. Fei, **S. Seal**, S. C. Kuiry, "Inhibition of Metastable Alumina Growth: Titania Coating on FeCrAlY Fine Fibers", in symposium Q1, "High Temperature Materials Chemistry **Symposium in Honor of Professor C.B. Alcock**", as a part of the 204th Meeting of The Electrochemical Society in Orlando, FL from October 12-October 16, 2003.
147. D. Bera, S. Patil, S. C. Kuiry, **S. Seal**, "Template Assisted Electrodeposition of Palladium Nanoparticles", symposium AC1, "Emerging, Sensing, and Actuating Materials and Technology", as a part of the 204th Meeting of The Electrochemical Society in Orlando, FL from October 12-October 16, 2003.
148. M. McCutchen, D. Bera, S. C. Kuiry, **S. Seal**, "Synthesis of Carbon Nanotubes Filled with Palladium Nanoparticles Using Arc Discharge in Solution", Symposium A1, "Student Poster Session", as a part of the 204th Meeting of The Electrochemical Society in Orlando, FL from October 12-October 16, 2003.
149. S. Shukla, **S. Seal**, "Metastable-Tetragonal Phase Stabilization in Nanocrystalline and Sub-Micron Sized Undoped Zirconia", in symposium A2, "Nanostructured Materials", as a part of the 204th Meeting of The Electrochemical Society in Orlando, FL from October 12-October 16, 2003.
150. S. Patil, S. C. Kuiry, **S. Seal**, "Effectiveness of Nanocrystalline Ceria for Better High Temperature Oxidation Protection", in symposium A2, "Nanostructured Materials", as a part of the 204th Meeting of The Electrochemical Society in Orlando, FL from October 12-October 16, 2003.
151. K. Rea, A. Kruize, S. O'Dell, **S. Seal**, "The Synthesis and Mechanical Properties of Nanostructured Plasma Formed W-HfC Bulk Components", in symposium A2, "Nanostructured Materials", as a part of the 204th Meeting of The Electrochemical Society in Orlando, FL from October 12-October 16, 2003.
152. P. Georgieva, S. C. Kuiry, **S. Seal**, "Computation of Mechanical Properties of Nanostructured Materials", in symposium A2, "Nanostructured Materials", as a part of the 204th Meeting of The Electrochemical Society in Orlando, FL from October 12-October 16, 2003.
153. S. C. Kuiry, Y. Obeng, S. Deshpande, **S. Seal**, "Chemical-mechanical Planarization of Copper: Role of Oxidants and Inhibitors", in symposium M1, "Sixth International Symposium on Chemical Mechanical Polishing", as a part of the 204th Meeting of The Electrochemical Society in Orlando, FL from October 12-October 16, 2003.
154. **Invited:** Y. Obeng, J. Ramsdell, K. Richardson, **S. Seal**, "Performance-Surface Characteristics of psiloQuest's Application Specific Pads for Chemical Mechanical Planarization", M1, "Sixth International Symposium on Chemical Mechanical Polishing", as a part of the 204th Meeting of The Electrochemical Society in Orlando, FL from October 12-October 16, 2003.
155. Y. Obeng, S. C. Kuiry, S. Deshpande, **S. Seal**, "Impact of CMP Consumables on Copper Metallization Reliability", in symposium M1, "Sixth International Symposium on Chemical Mechanical Polishing", as a part of the 204th Meeting of The Electrochemical Society in Orlando, FL from October 12-October 16, 2003.
156. S. Shukla, **S. Seal**, "Modeling and Sensing Hydrogen at Lower Operating Temperatures using Nanocrystalline Tin Oxide Thin Films", in symposium AC1, "Emerging, Sensing, and Actuating Materials and Technology", as a part of the 204th Meeting of The Electrochemical Society in Orlando, FL from October 12-October 16, 2003.

IV. CANDIDATES RESUME

157. **Invited: S. Seal**, Phase stabilization in nanostructures, Nano 2003, Crete, Greece 2003.- **NSF Workshop**.
158. P.G. Callaghan, J. Colon, S. Merchant, S.C. Kuiry, S. Patil, **S. Seal**, B. Rzigalinski, "Deleterious Effects of Microglia Activated By In Vitro Trauma are Blocked by Engineered Oxide Nanoparticles", presented in the 33rd Annual Meeting of the Society for Neuroscience, Session 11: Trauma Brain I, November 8-12, 2003, New Orleans, LA. Program No. 11.7, Washington, DC: Society for Neuroscience, 2003.
159. R. Fry, A. Ellison, J. Colon, S. Merchant, S.C. Kuiry, S. Patil, **S. Seal**, B. Rzigalinski, "Engineered Oxide Nanoparticles Protect against Neuronal Damage Associated with In Vitro Trauma", presented in the 33rd Annual Meeting of the Society for Neuroscience, Session 552: Trauma Brain III, November 8-12, 2003, New Orleans, LA, Program No. 552.9., Washington, DC: Society for Neuroscience, 2003.
160. A. Cook, R. Aguilar, S. Merchant, S.C. Kuiry, S. Patil, **S. Seal**, B. Rzigalinski, "Neuronal Damage Induced by Polychlorinated Biphenyls is Partially Reversed by Cerium Oxide Nanoparticles", presented in the 33rd Annual Meeting of the Society for Neuroscience, Session 669: Toxic Metabolic Effects and Disorder V, November 8-12, 2003, New Orleans, LA, Program No. 669.13, Washington, DC: Society for Neuroscience, 2003.
161. A. Clark, A. Ellison, R. Fry, S. Merchant, S.C. Kuiry, S. Patil, **S. Seal**, B. Rzigalinski, "Engineered Oxide Nanoparticles Increase Neuronal Lifespan in Culture and Act as Free Radical Scavengers", presented in the 33rd Annual Meeting of the Society for Neuroscience, Session 878: Aging: Physiology and Techniques, November 8-12, 2003, New Orleans, LA, Program No. 878.2, Washington, DC: Society for Neuroscience, 2003.
162. K. Rea, **S. Seal**, A. Agarwal, S. Wannaparhun, T. McKechnie, Retention of nanostructures in plasma formed hyper-eutectic bulk components, 203rd ECS meeting, Aril 27 – May 2, Paris, France, 2003.
163. S. C. Kuiry and **S. Seal**, Role of oxidizer and inhibitor on CMP of Copper, 203rd ECS meeting, Aril 27 – May 2, Paris, France, 2003.
164. A. Sweeney, P. Vaidyanathan, **S. Seal**, "The promises and perils of nanoscience and nanotechnology: Exploring emerging social and ethical issues", 18th annual meeting of the *National Association for Science, Technology and Society*, February 20-22, 2003, Baltimore, MD.
165. A. Agarwal, K.Rea, S.Wannaparhun, **S. Seal**, N.B. Dahotre and T. McKechnie, "Aluminum Based Nanostructured Composite Coatings: Processing, Microstructure and Wear Behavior", *In: Surface Engineering in Materials Science II, TMS Annual Meeting*, San Diego, CA, 2003.
166. S. Shukla and **S. Seal**, Phase stabilization in nanostructured zirconia, ", *In: Surface Engineering in Materials Science II, TMS Annual Meeting*, San Diego, CA, 2003.
167. S. Shukla, S. Patil, S. C. Kuiry, **S. Seal**, Sol-Gel Derived Nanocrystalline Tin Oxide Based Hydrogen Gas Sensor, *TMS Annual Meeting*, San Diego, CA, 2003.
168. K. Rea, **S. Seal**, "FIB of a single particle", AVS FI Chapter 2003.
169. S. Patil, **S. Seal**, "Nanoceria as oxygen sensor", AVS FI Chapter 2003.
170. D. Bera, **S. Seal**, "Electrodeposited Pd nanoparticles", AVS FI Chapter 2003.
171. S. Shukla, **S. Seal**, "Phase stabilization in nano zirconia", AVS FI Chapter 2003
172. W. Fei, **S. Seal**, S. Kuiry, N. Quick, Nano-structured porous oxide coating on fine FeCrAl alloy fibers," *In: Surface Engineering in Materials Science II, TMS Annual Meeting*, San Diego, CA, 2003.

IV. CANDIDATES RESUME

173. W. Li, G. Delong and **S. Seal**, Synthesis and Characterization of Nano Ag-SiO₂ Core-Shell, *American Ceramic Soc, Cocoa Meeting, FL, 2003.*
174. **S. Seal**, S. Shukla, S. Patil, S. C. Kuiry, L. Ludwig, and C. Parish, Room Temperature Hydrogen Gas Sensor Based on Nanocrystalline Tin Oxide Thin Film, *American Ceramic Soc, Cocoa Meeting, FL, 2003.*
175. S. Wannaparhun, S.C. Kuiry, E. Megen, S. Patil, **S. Seal**, Synthesis and Consolidation of Ni-coated Al₂O₃ Powder to Bulk Nanocomposite Components, *American Ceramic Soc, Cocoa Meeting, FL, 2003.*
176. S. Wannaparhun, S.C. Kuiry, E. Megen, S. Patil and **S. Seal**, Synthesis and consolidation of nanoparticles to prepare nanocomposite components, *MRS Fall Meeting, Boston, MA, 2002.*
177. S. Patil, **S. Seal**, S. C. Kuiry, "Enhancement of High Temperature Oxidation Resistance of Fe-Cr-Ni Alloys Using Nanocrystalline CeO₂ Coating Synthesized by Microemulsion Technique" *49th AVS International Symposium, Denver, CO, 2002.*
178. **S. Seal** and S. V. Shukla, "Engineered Surface Modified Nanomaterials and Phase Stabilization 13th IFHTSE Congress/International Surface Engineering Congress, *3rd Annual International Federation for Heat Treatment & Surface Engineering (IFHTSE) Congress, ASM's Surface Engineering Congress, October 7-10, 2002, Columbus, Ohio*
179. W. Li, **S. Seal**, and E. Megan, "Optical nanomaterials using solgel", *NANO 2002, Orlando, FL.*
180. **S. Seal**, S. V. Shukla and R. Vanfleet, "Solgel derived sterically stabilized zirconia nanoceramics for sensors and coatings", *NANO 2002, Orlando, FL.*
181. S. C. Kuiry, **S. Seal**, S. Patil and R. Vanfleet, "Coating of Cerium Oxide Nanoparticles on Stainless Steels to Improve High Temperature Oxidation Resistance", *NANO 2002, Orlando, FL.*
182. S. V. Shukla, **S. Seal** and R. Vanfleet, "Solgel derived zirconia nanoparticles", *2002 Joint Annual Symp., FSM and AVS, Mar 11-15, Orlando, FL, 2002.*
183. W. Li, **S. Seal**, and E. Megan, "Optical nanomaterials using solgel", *NANO 2002, Orlando, FL. FSM and AVS, Mar 11-15, Orlando, FL, 2002.*
184. S. Patil, S. C. Kuiry, **S. Seal** and R. Vanfleet, "Coating of ceria nanoparticles on AISI 304 stainless steel to improves high temperature oxidation resistance", *FSM and AVS, Mar 11-15, Orlando, FL, 2002.*
185. **Invited:** Y. Obeng, J. Ramsdell, S. Machinsky, H. Lu, K. Richardson and **S. Seal**, "Characterization of in-process degradation of polyurethanes CMP pads", *201st ECS Centennial meeting, May 12-17, Philadelphia, Pennsylvania, 2002.*
186. J. Ramsdell and **S. Seal**, "Characterization of Segmented Polyurethane Surface Domains as related to Chemical Mechanical Polishing (CMP)", *201st ECS Centennial meeting, May 12-17, Philadelphia, Pennsylvania, 2002.*
187. W. Fei, S. C. Kuiry, **S. Seal**, K. Scammon, N. Quick, "High temperature oxidation of alloy fibers: a marker study", *201st ECS Centennial meeting, May 12-17, Philadelphia, Pennsylvania, 2002.*
188. S. C. Kuiry, **S. Seal**, E. Megen and V. Desai, "Role of hydrogen peroxide and glycine on Ta-CMP", *201st ECS Centennial meeting, May 12-17, Philadelphia, Pennsylvania, 2002.*
189. W. Li, **S. Seal**, L. Lachal, E. Megen, "Optical nanomaterials via solgel", *201st ECS Centennial meeting, May 12-17, Philadelphia, Pennsylvania, 2002.*
190. S. V. Shukla and **S. Seal**, "Solgel synthesis of sterically stabilized zirconia nanoparticles", *26th Annual International Conference on Advanced Ceramics and Composites, Jan 13-18th, Cocoa Beach, Florida, 2001.*

IV. CANDIDATES RESUME

191. S. V. Shukla and **S. Seal**, "Electroless technique for manufacturing metal-ceramic composites for EMI shielding and gas sensor applications", *26th Annual International Conference on Advanced Ceramics and Composites*, Jan 13-18th, Cocoa Beach, Florida, 2001.
192. W. Li, **S. Seal**, E. Megan*, L. Lachal and R. Vanfleet, "Formation and characterization of nanosilver containing sol-gel silica films", *26th Annual International Conference on Advanced Ceramics and Composites*, Jan 13-18th, Cocoa Beach, Florida, 2001.
193. **S. Seal**, S. Warnapurham, K. Scammon, Z. Rahman, V. Desai, "Physics of insulating CMC specimen preparation for non charging auger electron spectroscopy", *26th Annual International Conference on Advanced Ceramics and Composites*, Jan 13-18th, Cocoa Beach, Florida, 2001.
194. S. C. Kuiry, **S. Seal**, S. Patil and W. Fei, "Solgel derived nanoceria coatings for improving high temperature oxidation resistance of steels", *26th Annual International Conference on Advanced Ceramics and Composites*, Jan 13-18th, Cocoa Beach, Florida, 2001.
195. S. Warnapurham, **S. Seal**, V. Desai, "A combined spectroscopic and thermodynamic investigation of high temperature air and water vapor interaction of a Nextel-720/Alumina ceramic matrix composites", *26th Annual International Conference on Advanced Ceramics and Composites*, Jan 13-18th, Cocoa Beach, Florida, 2001.
196. **S. Seal**, S. Warnapurham, V. Desai, "Effect of water vapor in high temperature oxidation of CMC: an XPS study", *International Conference on Advances in Life Assessment and Optimization of Fossil Power Plants*, Sheraton World Resort, Orlando, Florida, Mar 11-13, 2002.
197. W. Fei, S. C. Kuiry, **S. Seal**, K. Scammon, N. Quick, "Stability and Oxidation Resistance of Novel Metallic Fibers", *15th International Conference on Surface Modification Technologies*, Surface Engineering Critical Technologies Sector, ASM Thermal Spray Society, ASM Heat Treating Society, ASM Materials Solution 2001, Indianapolis Convention Center, Indianapolis, Indiana, November 5-8, 2001.
198. **Invited: S. Seal**, "Novel Metallic, Sulfide, and Oxide Nanomaterials For Sensors, Electrodes, and Coatings", *Electrical Engineering and Computer Sciences Electronics Research Laboratory University of California at Berkeley*, 31st Aug 2001.
199. **S. Seal**, "Engineered nanoparticles made from Sol-gel technology", *AMPAC NANO Seminar Series*, UCF, Orlando, FL, May 2nd 2001.
200. **S. Seal**, V. Desai, Y. Li and S. V. Babu, "Surface passivation during chemical-mechanical polishing of copper using XPS", *Symposium M: Chemical-Mechanical Polishing-Advances and Future Challenges MRS 2001 Spring Meeting*, San Francisco, April 16-20, 2001.
201. **Invited:** K. A. Richardson, A. Schulte, **S. Seal**, Villeneuve, T. Galstian, R. Vallé, T. Cardinal, M. Couzi and J. L. Brunéel, "Engineering Chalcogenide Glass Materials for Integrated Optics Applications", *Amorphous and Nanostructured Chalcogenides meeting, Romania, Who's Who in Chalcogenides*, June 25-28th, 2001.
202. **S. Seal**, A. Kale, K. Sundaram, N. Dahotre, "Effect of deposition temperature on the chemical and mechanical behavior of Ti-Al-N thin films", *Fundamental Gas-Phase and Surface Chemistry of Vapor Deposition II and Process Control, Diagnostics, and Modeling in Semiconductor Manufacturing IV 198th ECS meeting*, Washington, DC March 25-30, 2001
203. **S. Seal**, K. Sapre, W. Jepson, "The effect of multiphase flow on inhibitor films", *CORROSION/2001, NACE International's Annual Conference*, Houston, Texas, March 11-16, 2001.
204. J. Ramsdell & **S. Seal**, "Surface characterization of polyurethanes using x-ray photoelectron spectroscopy (XPS) and atomic force microscopy (AFM)", *29th Annual Symposium Florida AVS*, 19th

IV. CANDIDATES RESUME

- Annual meeting of FSM and 23rd Annual Symposium Surface Analysis 2001, UCF, Orlando, March 12-15, 2001.*
205. S. Shukla and **S. Seal**, "Synthesis and characterization of yttria stabilized zirconia nanoceramic powder by modified sol-gel technique", *29th Annual Symposium Florida AVS, 19th Annual meeting of FSM and 23rd Annual Symposium Surface Analysis 2001, UCF, Orlando, March 12-15, 2001.*
 206. W. Li, **S. Seal**, C. Lopez, K. A. Richardson, "Structure and chemical analysis of As-A-Se glasses (used for waveguide applications) by XPS", *29th Annual Symposium Florida AVS, 19th Annual meeting of FSM and 23rd Annual Symposium Surface Analysis 2001, UCF, Orlando, March 12-15, 2001.*
 207. S. Wannaparhun, **S. Seal**, V. Desai, K. Scammon, Z. Rahman, C. Campbell, "Charge layer calculation of oxide/oxide ceramic composite for effective surface characterization using AES and FIB," *29th Annual Symposium Florida AVS, 19th Annual meeting of FSM and 23rd Annual Symposium Surface Analysis 2001, UCF, Orlando, March 12-15, 2001.*
 208. T. Smith, K. Sapre, **S. Seal** and P. Jepson, "Temperature stability of imidazoline for corrosion prevention of 1018 steel", *29th Annual Symposium Florida AVS, 19th Annual meeting of FSM and 23rd Annual Symposium Surface Analysis 2001, UCF, Orlando, March 12-15, 2001.*
 209. **S. Seal**, L. Bracho and V. Desai, Role of Temperature in the Surface Oxidation Chemistry of IN-738 Superalloy, High Temperature Coatings IV, *TMS 2001 Annual Meeting, New Orleans, Louisiana, Feb – 11-15, 2001.*
 210. **INVITED: S. Seal**, W. Easter, K. Richardson, S. Ostapenko, V. Desai, W. Moreno, Chemical Mechanical Planarization: An Industry – University Research Initiative, *AVS Second International Conference on Microelectronics and Interfaces, Convention Center, Santa Clara, CA, February 5-9, 2001.*
 211. C. X. Campbell, E. V. Carelli, P. Vargese, V. Desai, **S. Seal** and S. Jha, "Strength retention of an oxide/oxide CMC after exposure in a high temperature water vapor environment", *The 25th Annual International Conference on Advanced Ceramics & Composites, Cocoa Beach, Florida, Jan. 21-26, 2001*
 212. **S. Seal**, S. Wannaparhum, P. Vargese, V. Desai, C. X. Campbell, and S. Jha, "Characterization of the effect of water vapor exposure on Nextel 720 in an alumina matrix CMC," *The 25th Annual International Conference on Advanced Ceramics & Composites, Cocoa Beach, Florida, Jan. 21-26, 2001*
 213. J. Ramsdell, **S. Seal**, I. Li, K.A. Richardson, V. Desai, W.G. Easter, "Surface Characterization of Polyurethane Pads Used in Chemical Mechanical Polishing (CMP)," *Fourth International Symposium on Chemical Mechanical Polishing (CMP), 198th ECS meeting, Phoenix, Arizona, October 22-27, 2000.*
 214. **S. Seal**, A. Guha, V. Desai and W. Easter, "Role of inhibitors in slurries in altering surfaces: Cu-CMP", *Joint Session: Fourth International Symposium on Chemical Mechanical Polishing (CMP) & Copper Interconnects, New Contact Metallurgies/Structures, and Low-K Interlevel Dielectrics), 198th ECS meeting, Phoenix, Arizona, October 22-27, 2000.*
 215. K. Sundaram, C. Raman, V. Desai, D. Tamboli and **S. Seal**, An Electrochemical Investigation on Ti and TiN", *Fourth International Symposium on Chemical Mechanical Polishing (CMP), 198th ECS meeting, Phoenix, Arizona, October 22-27, 2000.*
 216. S. Shukla and **S. Seal**, Cluster size effect observed for gold and silver sulfide nanoparticles synthesized by sol-gel technique as studied by x-ray photoelectron spectroscopy, *47th National Symposium AVS, Boston, MA, 2-6th October, 2000.*
 217. S. Shukla, **S. Seal** and S. Mishra, Synthesis And Characterization Of Yttria Stabilized Zirconia Nanoceramic Powder By Sol-Gel Technique, *47th National Symposium AVS, Boston, MA, 2-6th October, 2000.*

IV. CANDIDATES RESUME

218. **Invited Talk: S. Seal**, (ICCE/7), *SEVENTH ANNUAL INTERNATIONAL CONFERENCE ON COMPOSITES ENGINEERING, DENVER, COLORADO, USA, July 2-8, 2000*, sponsored by International Community for Composites Engineering and UNO College of Engineering.
219. S. K. Hong, S. Beverly, **S. Seal**, R. Reiss, J. Taylor, "Identification of RO membrane failure by X-ray photoelectron spectroscopy," *American Water Works Association, AICHE Annual Meeting, 2000 Annual Conference, June 11-15, Denver, Colorado, 2000*.
220. A. Saliminia, T. Galstian, A. Villeneuve, K. Richardson, A. Graham, C. Lopez, **S. Seal**, D. K. Verma, A. Shulte, "Polarization dependent surface photomodulation in As₂S₃ chalcogenide glass", *CLEO Conference 5th – 8th May, San Francisco, Optical Society of America, 2000*.
221. D. Tamboli, **S. Seal**, J. Ramsdell, V. Desai, "Role of inhibitors in presence of oxidizers in Cu-CMP", *MRS Spring, San Francisco, 2000*.
222. **S. Seal**, I. Li, K. A. Richardson, B. Easter, "Pad Surface Chemistry in Chemical Mechanical Process," *MRS Spring, San Francisco, 2000*.
223. D. Tamboli, V. Desai, **S. Seal**, A. Maury, "Effect of Slurry Chemistry on Removal Rates in Tungsten CMP", *MRS Spring, San Francisco, 2000*.
224. V. Desai, C. Wei, D. Tamboli, **S. Seal**, "Studies on Selectivity towards Barrier Layer in Copper CMP", *MRS Spring, San Francisco, 2000*.
225. K. Sapre, **S. Seal**, M. Gopal, V. Desai, P. Jepson, "Microstructural analysis of CO₂ corrosion product in carbon steel under multiphase flow conditions," *MRS Spring, San Francisco, 2000*.
226. D. K. Verma, **S. Seal**, C. Lopez, K. A. Richardson, K. Zollinger, A. Graham, A. Schulte, K. Turcotte, J. M. Lanie, T. Galstian and A. Villeneuve, "Structure and Chemical Analysis of As₂S₃ glasses used for Waveguide Applications," *MRS Spring, San Francisco, 2000*.
227. **S. Seal**, K. Sapre, M. Gopal, V. Desai and W. P. Jepson, "Surface chemical and morphological changes in corrosion product layers and inhibitors in CO₂ corrosion in multiphase flowlines", *CO₂ Corrosion in Oil and Gas Production NACE Corrosion 2000, March 26-31, Orlando 2000*.
228. D. K. Verma, "Structure and chemical analysis of as₂s₃ glasses (used for waveguide applications) with and without O₂ contamination," *NACE Corrosion 2000, March 26-31, Orlando 2000*. (Ack: **S. Seal**, K. Richardson).
229. L. Bracho, "Role of temperature and time in the surface oxidation chemistry of IN-738 superalloy performance of ceramic matrix composites for gas turbine applications," *NACE Corrosion 2000, March 26-31, Orlando 2000*. (Ack: **S. Seal**, V. Desai).
230. S. Wannaparhun, "Studying the high temperature effects on microstructure, surface and interface chemical evolution of the high temperature performance of ceramic matrix composites for gas turbine applications," *NACE Corrosion 2000, March 26-31, Orlando 2000*. (Ack: **S. Seal**, V. Desai, C. Campbell, S. Jha).
231. P. Varghese, "Studying the effect of high temperature and steam on mechanical properties of ceramic matrix composites for gas turbine application," *NACE Corrosion 2000, March 26-31, Orlando 2000*. (Ack: V. Desai, **S. Seal**, C. Campbell, S. Jha).
232. **S. Seal**, A. Kale, S. Sundaram, D. Jimenez, V. Desai, N. B. Dahotre, "Effect of deposition temperature on the physico-chemical behavior of Ti-Al-N thin films," *Surface Engineering in Materials Science I, TMS 2000 Annual Meeting, 12-16 March 2000, Nashville, TN, 2000*.

IV. CANDIDATES RESUME

233. C. Wei, D. Tamboli , V. Desai. **S. Seal**, "Electrochemical characterization of copper and tantalum CMP, 3rd Annual Joint Meeting of the Florida Chapter of the Microscopy Society of America and the Florida Chapter of the American Vacuum Society", Orlando, Florida, March 2000.
234. J. Akesson, S. Shukla, **S. Seal**, R. Oder, "Characterization of copper-coatings on ceramic spheres by SEM and XPS", 3rd Annual Joint Meeting of the Florida Chapter of the Microscopy Society of America and the Florida Chapter of the American Vacuum Society", Orlando, Florida, March 2000.
235. K. Sapre, **S. Seal**, V. Desai, M. Gopal, S. Anders, P. Jepson, "Microstructural analysis of CO₂ corrosion in 1018 carbon steel: a multiphase flow study," 3rd Annual Joint Meeting of the Florida Chapter of the Microscopy Society of America and the Florida Chapter of the American Vacuum Society", Orlando, Florida, March 2000.
236. S. Shukla and **S. Seal**, "Cluster size effect observed for gold nanoparticles synthesized by sol-gel technique as studied by x-ray photoelectron spectroscopy", 3rd Annual Joint Meeting of the Florida Chapter of the Microscopy Society of America and the Florida Chapter of the American Vacuum Society", Orlando, Florida, March 2000
237. P. Varghese, S. Wannaparhun, V. Desai, **S. Seal**, S. K. Jha, "Studying the effect of high temperature and steam on mechanical properties of ceramic matrix composites for gas turbine application", 3rd Annual Joint Meeting of the Florida Chapter of the Microscopy Society of America and the Florida Chapter of the American Vacuum Society", Orlando, Florida, March 2000.
238. D. K. Verma, **S. Seal**, C. Lopez, K. A. Richardson, A. Graham, A. Schulte, K. Turcotte, J. M. Laniel, T. Galstian and A. Villeneuve, "Structure and chemical analysis of As₂S₃ glasses (used for waveguide applications) with and without O₂ contamination, 3rd Annual Joint Meeting of the Florida Chapter of the Microscopy Society of America and the Florida Chapter of the American Vacuum Society", Orlando, Florida, March 2000.
239. S. Wannaparhun, P. Varghese, **S. Seal**, V. Desai, S. K. Jha, C. Campbell, and D. Tamboli, "Studying the high temperature effects on microstructure, surface and interface chemical evolution of the high temperature performance of ceramic matrix composites for gas turbine applications", 3rd Annual Joint Meeting of the Florida Chapter of the Microscopy Society of America and the Florida Chapter of the American Vacuum Society", Orlando, Florida, March 2000.
240. K. Sapre, **S. Seal**, A. Kale, S. Shukla, L. Bracho, V. Desai, M. Gopal, P. Jepson, "Multifaceted Surface Topography in Multiphase Corrosion of C-Steel in Oil and Gas Lines," 32nd Annual Convention of the International Metallographic Society (IMS), 31 October - 3 November, Cincinnati, Ohio, 1999.
241. S.D. Beverly, **S. Seal**, S.K. Hong, AS-ThM11, "Identification of Surface Chemical Functional Groups in Reverse Osmosis Membranes: An X-ray Photoelectron Spectroscopy Study", 46th National Symposium AVS, Seattle, WA, 25 - 29th October, 1999.
242. L. Bracho, **S. Seal**, V. Desai, "Role of Temperature in the Surface Oxidation Chemistry of IN-738 Superalloy," 46th National Symposium AVS, Seattle, WA, 25 - 29th October, 1999.
243. **S. Seal**, D. Tamboli, V. Desai, S. Joshi, G. Shinn, EM1-ThA1, "Surface Chemical Changes during Cu Chemical Mechanical Polishing", 46th National Symposium AVS, , Seattle, WA, 25 - 29th October, 1999.
244. A. Kale, **S. Seal**, S. Sundaram, TF-MoP4, "Oxidation Studies and Chemical State Analysis of Polycrystalline Magnetron Sputtered (Ti, Al) N Films", 46th National Symposium AVS, Seattle, WA, 25 - 29th October 1999.
245. D. Tamboli, **S. Seal**, V. Desai, S. Joshi and G. Shinn, "Effect of thin film properties on CMP Performance of Cu", 46th National Symposium AVS, Seattle, WA, 25 - 29th October, 1999.
246. D. Tamboli, V. Desai, **S. Seal** and K. Sundaram, "Tungsten Dissolution Mechanism in Chemical Mechanical Planarization", in symposium K2, "Third International Symposium on Chemical Mechanical

IV. CANDIDATES RESUME

- Polishing in IC Device Manufacturing*", as a part of the 1999 Joint International Meeting of The Electrochemical Society in Honolulu from October 17-22, 1999.
247. D. Tamboli, **S. Seal**, V. Desai, S. Joshi and G. Shinn, "Chemical Mechanical Polishing of Electroplated Copper", in symposium K2, *"Third International Symposium on Chemical Mechanical Polishing in IC Device Manufacturing"*, as a part of the 1999 Joint International Meeting of The Electrochemical Society in Honolulu from October 17-22, 1999.
 248. S. Beverly, **S. Seal**, S. K. Hong, "Identification of Surface Chemical Functional Groups in Reverse Osmosis Membranes: An X-ray Photoelectron Spectroscopy Study in symposium V2, *"Electroorganic and Electroanalytical Aspects of Environmental Chemistry"*, as a part of the 1999 Joint International Meeting of The Electrochemical Society in Honolulu from October 17-22, 1999.
 249. **Invited Talk: S. Seal**, S. V. Shukla, "Application of XPS in Nanotechnology", *Surface Analysis*, 99, Wisconsin, USA, June 14- 17 1999.
 250. A. Kale, **S. Seal**, "Surface chemistry of Ti-Al-N thin films", *Surface Analysis*, 99, Wisconsin, USA, June 14- 17 1999.
 251. A. Kale, "Oxidation behavior of polycrystalline Ti-Al thin films", *NACE meeting*, San Antonio, TX, April 1999. (**Ack: S. Seal**, K. Sundaram)
 252. L. Bracho, "Ni-base superalloy oxidation", *NACE meeting*, San Antonio, TX, April 1999. (**Ack: S. Seal**, V. Desai)
 253. D. Tamboli, "Investigations into chemical mechanical polishing of tungsten using various electrochemical and surface science techniques", *NACE meeting*, San Antonio, TX, April 1999. (**Ack: S. Seal**, V. Desai)
 254. D. Tamboli, **S. Seal**, V. Desai, "XPS studies on oxidizer-tungsten interaction during chemical mechanical polishing", *MRS Spring*, San Francisco, 1999.
 255. **Invited: S. Seal**, "Application of XPS in Polymers", Pittcon, Orlando, Mar 1999.
 256. D. Tamboli, **S. Seal** and V. Desai, "Surface Science and Electrochemistry of Tungsten Passivation", *Florida AVS Chapter Meeting*, Orlando Florida, March 1999.
 257. A. S. Kale, **S. Seal**, K. R. Beaulieu, K. B. Sundaram, K. Casey, V. Desai, N. Sobczak, J. Morgiel, "Fabrication of DC-Magnetron Sputtered 70Ti-30Al Thin Films", *Florida AVS Chapter Meeting*, Orlando Florida, March 1999.
 258. L. A. Bracho, **S. Seal**, V. Desai, "Study of Corrosion Failures Under Atmospheric Conditions", *Florida AVS Chapter Meeting*, Orlando Florida, March 1999.
 259. K. R. Beaulieu, A. Kale, **S. Seal**, "Fracture and charging issues in AES", *Florida AVS Chapter Meeting*, Orlando Florida, March 1999.
 260. S. Beverly, S. Shukla, S. Hong, **S. Seal**, "Identification of surface chemical functional groups in polymer membranes: An x-ray photoelectron spectroscopy study", *Florida AVS Chapter Meeting*, Orlando Florida, March 1999.
 261. S. Shukla, **S. Seal**, "Formation of silver sulfide nano-particles by novel sol-gel method for industrial applications", *Florida AVS Chapter Meeting*, Orlando Florida, March 1999.
 262. D. Tamboli, **S. Seal**, V. Desai, "Investigations into chemical mechanical polishing of tungsten using various electrochemical and surface science techniques", *Florida AVS Chapter Meeting*, Orlando Florida, March 1999.

IV. CANDIDATES RESUME

263. N. Sobczak, J. Sobczak, **S. Seal**, J. Morgiel, "TEM examinations on effect of titanium on structure and chemistry of Al/C interfaces", *Florida AVS Chapter Meeting*, Orlando Florida, March 1999.
264. **Invited: S. Seal**, S. K. Roy, S. K. Bose and S. C. Kuiry, Role of rare earth oxide coatings in high temperature oxidation of austenitic steels, submitted *TMS Proceedings*, San Diego, CA, Feb 28th - Mar 4th, 1999.
265. A. Kale, **S. Seal**, K. Beaulieu, K. Sundaram, "Oxidation studies of Metastable Polycrystalline Magnetron Sputtered (Ti,Al)N films", *TMS Proceedings*, San Diego, CA, Feb 28th - Mar 4th, 1999.
266. S. Shukla, **S. Seal**, Formation of silver sulfide nano-particles by novel sol-gel method for industrial applications, *TMS Proceedings*, San Diego, CA, Feb 28th - Mar 4th, 1999.
267. A. Kale, **S. Seal**, K. Beaulieu, V. Desai, K. Sundaram, "Effect of processing parameters on the chemistry of magnetron sputtered Ti-Al thin films," Symp OO, *MRS Fall 1998*.
268. N. Ruiz, **S. Seal**, D. Reinhart, C. Clausen and S. Geiger, "Surface Chemical Reactivity in Selected Iron Samples Used in Remediation Technology", Symp SS18, *45th National Symposium AVS*, Baltimore, MD, 2 - 6th November, 1998.
269. **S. Seal**, B. Nardelli, A. Kale, V. Desai, K. Cassey, "Role of surface chemistry on the nature of Passive Oxide Film growth on Fe-Cr (low & High) Alloys at high temperatures", Symp AS 10, *45th National Symposium AVS*, Baltimore, MD, 2 - 6th November, 1998.
270. **S. Seal**, C. Urbanik, L. Bracho, M. Hampton, "Processing and characterization of nanometer sized copper sulfide particles", Symp AS 10, *45th National Symposium AVS*, Baltimore, MD, 2 - 6th November, 1998.
271. A. Kale, **S. Seal**, S. K. Date, P. N. Santosh, "Synthesis and I-V Characterization of Tin dioxide Varistors", Symp EM 15, *45th National Symposium AVS*, , Baltimore, MD, 2 - 6th November, 1998.
272. D. Tamboli, **S. Seal**, V. Desai, Studies on passivation behavior of tungsten in application to chemical mechanical polishing, Symp EM 10, *45th National Symposium AVS*, Baltimore, MD, 2 - 6th November, 1998.
273. T. L. Barr, E. E. Hoppe, S. Hardcastle, **S. Seal**, XPS investigations of the chemistries of soils, Symp As 2, *45th National Symposium AVS*, Baltimore, MD, 2 - 6th November, 1998.
274. **S. Seal**, A. Kale, K. Beaulieu, K. Sundaram, M. Hampton, V. Desai, Fabrication and Characterization of Nanophase Materials for Space Applications, *1st Annual Partners in Education and Research Conf.*, 6-8 Nov, NASA, Cocoa, FL 1998.
275. M. Hampton, **S. Seal**, Hydrogen Storage in Quasicrystals of Ti-Mg-Ni, *1st Annual Partners in Education and Research Conf.*, 6-8 Nov, NASA, Cocoa, FL 1998.
276. **S. Seal**, A. Warwick, A. Garcia, J. Denlinger, T. L. Barr, B. P. Tonner, N. Sobczak, "Submicron Photoelectron Spectromicroscopy to Study Al-Ti-C Interface", **GORDON Research Conferences for ELECTRON SPECTROSCOPY**, New England College, 26-31st July, 1998.
277. D. Tamboli, A. Kale, **S. Seal**, V. Desai, "Studies on Passivation Behavior of Tungsten in Application to Chemical Mechanical Polishing", **GORDON Research Conferences for CORROSION**, Colby Sawyer College, 5-10th July, 1998.
278. J. Blanchard, K. B. Sundaram, **S. Seal**, "Effect of processing parameters on the surface chemistry of sputter deposited SiC thin films", *26th Annual Symp. On Applied Vac. Sci. and Tech*, 16th Annual meet. Of the Florida Soc. For Microscopy, UCF, Orlando FL February 1998.
279. B. Nardelli, C. Urbanik, A. Kale, D. Tamboli, V. Desai, T. L. Barr, **S. Seal**, "Nature of passive oxide film on Fe-Cr (low and high) alloys and its role in material degradation", *26th Annual Symp. On*

IV. CANDIDATES RESUME

- Applied Vac. Sci. and Tech*, 16th Annual meet. Of the Florida Soc. For Microscopy, UCF, Orlando FL February 1998.
280. D. Tamboli, **S. Seal**, V. Desai, "X-ray photoelectron spectroscopy: In support for chemical mechanical polishing", *26th Annual Symp. On Applied Vac. Sci. and Tech*, 16th Annual meet. Of the Florida Soc. For Microscopy, UCF, Orlando FL February 1998.
 281. **Invited talk: S. Seal**, T. L. Barr, D. Petering, J. Klinowski, "Understanding the cell/material interaction in relation to asbestos-type diseases by surface science methods", *26th Annual Symp. On Applied Vac. Sci. and Tech*, 16th Annual meet. Of the Florida Soc. For Microscopy, UCF, Orlando FL February 1998.
 282. **Invited talk: T. L. Barr**, E. Hoppe, P. Shah, T. Ducall, **S. Seal**, "Application of photoelectron spectroscopy to practical non-conductive system", *26th Annual Symp. On Applied Vac. Sci. and Tech*, 16th Annual meet. Of the Florida Soc. For Microscopy, UCF, Orlando FL February 1998.
 283. **S. Seal**, T. Warwick, A. Garcia, H. Ade, J. Denlinger, B. Tonner, T. L. Barr, N. Sobczak, "Scanning Photoelectron Microscopy studies at the Advanced Light Source" *44th National Symposium AVS*, San Jose, CA, 20 - 24th October, 1997.
 284. **S. Seal**, J. H. Underwood, M. Uda, H. Osawa, A. Kanai, T. L. Barr, E. Benko, R. C. C. Perera, "Effect of temperature on Ti and TiN films deposited on BN substrate", *44th National Symposium AVS*, San Jose, CA, 20 - 24th October 1997.
 285. **S. Seal**, T. L. Barr, N. Sobczak, J. Morgiel, "An X-ray photoelectron spectroscopic study of B-N-Ti system", *MRS Spring Meeting*, San Francisco, CA, 31st Mar - 4th April 1997.
 286. T. Warwick, H. Ade, S. Cerasari, J. Denlinger, A. Garcia1, S. Hayakawa, A. Hitchcock, J. Kikuma, J. Kortright, M. Moronne, E. Rightor, E. Rotenberg, **S. Seal**, H-J. Shin, R. Steele and B. Tonner, "Scanning Zone-plate X-ray Microscopes for Materials Analysis at the Advanced Light Source", *9th Intl. Conf. Modern. Materials. Tech. CIMTEC98*, Italy, 1997.
 287. **S. Seal**, S. Krezoski, T. L. Barr and D. Petering, "Characterization of chemical interaction of asbestos surfaces during culturing with animal cells", *43rd National Symposium AVS*, Philadelphia, PA, 14 - 18th October, 1996.
 288. **S. Seal**, N. Sobczak, E. Benko and T. L. Barr, "An XPS study of the chemical interaction between BN and Ti/TiN", *43rd National Symposium AVS*, Philadelphia, PA, 14 - 18th October 1996.
 289. **S. Seal**, S. Krezoski, T. L. Barr, D. H. Petering and J. Klinowski, "Surface Modification of Chrysotile fibers During the Interaction With Murine Lung (L2) Cells: An ESCA Study", *Symposium for Biomaterial Surfaces*, , 77-78, Phoenix, AZ, 4th - 8th Sep 1996.
 290. N. Sobczak, E. Benko, **S. Seal** and T. L. Barr, "Wetting and interfacial chemistry in CuTi/BN system", *Third International Conference on Composites Engineering, ICCE/3*, 111-112, New Orleans, LA, July 21-26, 1996.
 291. **S. Seal**, S. K. Bose, S. K. Roy and T. L. Barr, "Electron Microscopy of the High Temperature Oxidation of Stainless Steels in Presence of Rare Earth Oxide Coatings", *Microscopy of Surfaces and Interfaces, MMMS Workshop*, 26th April, UWM, 1996.
 292. **Invited Poster talk: T. L. Barr S. Seal**, S. Krezoski and D. Petering, "Silica and Silicates - Are they really inert?" *In the Honor of Prof. Wolfgang M. H. Sachtleer's Distinguished career in Catalysis*, Argonne National Laboratory, IL, 14th May 1996.
 293. **S. Seal**, T. L. Barr, S. Krezoski and D. H. Petering, "Monitoring the interfacial chemistry during interactions of biocells with silicon, silica & fibrous amphibole silicate", *Laboratory for Surface Studies Graduate Student Symposium*, 27th April, UWM, 1996.

IV. CANDIDATES RESUME

294. **Invited Talk:** D. Petering, **S. Seal**, S. Krezoski and T. L. Barr, "Iron and Oxidant Stress: Connections with Asbestos, Fibers, Cellular Iron Status and Metallothionein," *Biomarkers to Toxic and Carcinogenic Metals*, Park City, Utah, Mar 6th-10th, 1996.
295. **S. Seal**, T. L. Barr, S. Krezoski and D. H. Petering, "Monitoring the interface surface chemistry during interactions of biocells with silicon, silica and silicate", *Biofilm Symposium*, Racine, WI, 17-19th Jan 1996.
296. **S. Seal**, S. Krezoski, D. Petering and T. L. Barr, "XPS studies of interaction of cells with various silicon based surfaces," *MRS Fall Meeting*, Boston, Massachusetts, 27th Nov - 1st Dec 1995.
297. **S. Seal**, S. Krezoski, D. Petering and T. L. Barr, "An XPS investigation of the interaction of cells with the surfaces of pathogenic asbestos", *42nd National Symposium AVS*, Minneapolis, Minnesota, 16 - 20th October 1995.
298. **S. Seal**, N. Sobczak, S. J. Kerber and T. L. Barr, "Interface evaluation in Al-Ti Alloy/Graphite systems: An X-ray photoelectron spectroscopic approach", *42nd National Symposium AVS*, Minneapolis, Minnesota, 16 - 20th October 1995.
299. S. J. Kerber, J. J. Bruckner, K. Wozniak, **S. Seal**, S. E. Hardcastle and T. L. Barr, "The nature of hydrogen in XPS: General patterns from hydroxides to hydrogen bonding", *42nd National Symposium AVS*, 16 - 20th October, 1995, Minneapolis, Minnesota. (Also presented in *Annual Spring Meeting of the AVS Illinois/Wisconsin Chapter: Surfaces, Interfaces, and Thin Films*, 25th May, 1995.
300. **S. Seal**, S. C. Kuiry, S. K. Roy, S. K. Bose and T. L. Barr, "The effect of CeO₂ coatings on high temperature oxidation behavior of austenitic grades of stainless steel," **GORDON Research Conferences for CORROSION DRY**, New Hampshire, 16-21st July, 1995.
301. **Invited paper:** T. L. Barr and **S. Seal**, "Interaction of cells with the surfaces of pathogenic silicates", *Applied Surface Science Conf.*, Pennsylvania, June 6-9, 1995.
302. **S. Seal**, N. Sobczak, S. J. Kerber, S. E. Hardcastle, P. K. Rohatgi and T. L. Barr, "An electron spectroscopic interpretation of new phase formation: Further insight into the wettability in Al-Ti alloy/graphite systems", *Annual Spring Meeting of the AVS Illinois/Wisconsin Chapter: Surfaces, Interfaces, and Thin Films*, 25th May, 1995.
303. **S. Seal**, "Improvement in high temperature oxidation behavior of austenitic stainless steels by superficially applied rare earth oxide (CeO₂) coatings", *NACE's Annual Conference, CORROSION*, Orlando, FL, 26 - 31st Mar 1995.
304. **S. Seal**, S. Krezoski, T. L. Barr, S. Hardcastle and D. H. Petering, "An XPS study of Pathogenic Serpentine Asbestos", *Laboratory for Surface Studies Graduate Student Symposium*, UWM, 18th Feb 1995.
305. **S. Seal**, S. Krezowski, T. L. Barr, D. Petering, H. He and J. Klinowski, "Investigations of the surface chemistry of pathogenic silicates", *41st National Symposium and Nano 3: 3rd International Conf of manometer - scale Science & Technology*, Denver, Colorado, 24 - 28th October, 1994.
306. T. L. Barr and **S. Seal**, "On the nature of the use of adventitious carbon as binding energy standard", *41st National Symposium and Nano 3: 3rd International Conf of manometer - scale Science & Technology*, Denver, Colorado, 24 - 28th October, 1994.
307. **S. Seal**, D. Nath, P. K. Rohatgi, C. S. Narendranath and L. Ramanathan, "Corrosion and dezincification of lead free cast copper graphite alloys", *International Symposium on Localized Dissolution / Corrosion.* '94 Materials Week, 3-6 October, Rosemont, IL, 1994.
308. **S. Seal**, T. L. Barr, S. E. Hardcastle, H. He and J. Klinowski, "The surface chemistry of selected tree leaves during senescence studied by ESCA technique", *SISS meeting*, UWM, 3rd June, 1994.

IV. CANDIDATES RESUME

309. **S. Seal**, S. E. Hardcastle and T. L. Barr, "Generalized ESCA studies of silicates: From geochemistry to pathogenesis", *Spring Symposium, AMOCO Research Center, Cat Club of Chicago*, May 9, 1994.
310. T. L. Barr, **S. Seal**, L. M. Chen and C. C. Kao, "A new interpretation of the binding energies in XPS studies of oxides", *International Conf. On Met Coatings and Thin Films*, San Diego, California, Apr. 25-29, 1994.