Ashish Milind Ganvir

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EDUCATIONAL QUALIFICATIONS

Year	Degree	Institute	CPI/%
2013	B-Tech Materials &Metallurgical Engineering.	Indian Institute of Technology, Kanpur	*8.0/10 **7.2/10
2009	All India Senior School Certificate Examination AISSCE-2009.	Jawahar Navodaya Vidyalaya Amravati	88%
2007	All India Secondary School Examination AISSE-2007.	Jawahar Navodaya Vidyalaya Amravati	85%

*Overall Departmental CPI; **SPI of 7th (2nd last semester)

SCHOLASTIC ACHIEVMENTS

- Awarded scholarship by the **NVS (Navoday Vidyalaya Samiti),Ministry of Human Resources Development (MHRD),INDIA** Only 80 students out of about 50000 students were selected 2001-2009
- Secured an **AIR 1614 in NSTSE-2007**(National Science Talent Search Examination) 2007-2008
- Awarded **1st Prize** in Regional level **CBSE Science Exhibition** held at Rajhans Vidyalaya **Mumbai** 2008-2009
- Participated in **Regional Science Congres**s held at **Gujarat Science City Ahmedabad** 2006-2007
- Participated in **National level CBSE Science Exhibition** held at **New Delhi** 2008-2009
- Secured **1st Position** in Science Exhibition in the Cluster sports Meet & exhibition, Jalgaon(M.S.), India 2007-2008

FOREIGN SUMMER INTERNSHIP ON "SOLID OXIDE FUEL CELLS"

Production technology centre (PTC) **TROLLHATTAN**, **SWEDEN** (May 12-Jul 12)

*PTC is one of the biggest research centres of Sweden which finds solutions for the manufacturing Industry in collaboration with world's two renowned companies i.e. **SAAB Automobile, Volvo Aero** and University West*

- **Objective** of the Project was to "Characterize the **Thermal barrier coatings (TBC) used in gas turbines & aircrafts** and Characterization of YSZ electrolyte used in the SOFC (Solid Oxide Fuel Cells)
- Mainly worked on "Characterisation of YSZ electrolyte for SOFC".
- **Concluded** that "Low pressure plasma Spray "(LPPS) methods used for producing YSZ electrolyte coatings on a substrate produce much denser coatings than "Atmospheric Pressure Plasma Spraying" (APPS) methods with the help Sulzer Metco F-4 gun system machine, Triplex gun and SEM
- **Concluded** "slow cold and quick cold mounting resin contains Carbon and Silica respectively using SEM-EDX technology
- Significant contribution to the **research paper on YSZ electrolyte**, SOFC which is **yet to be published** this year
- Experienced both **Industrial and research** working environment which helped me to learn both practical and experimental work together.

KEY ACADEMIC PROJECTS

B-tech-Project 1: Characterization of electrolyte material used in solid oxide fuel cell (Aug 12-Dec12)

- **Objective:** To see the behaviour of 8% YSZ; 8%YSZ+ Ceria; 8% YSZ+GDC and 8%YSZ+ Ceria+GDC by studying various properties like Density; Crystal structure, Conductivity, Composition, Hardness, Fracture toughness and Grain size
- **Procedure to be followed:**
  1. Started with 8%YSZ +GDC(10%) powders and mixed them by using ball mill in order to mix them homogeneously
  2. Used Spark plasma sintering process to make pellets of all the four composites
  3. Did XRD for phase analysis of the composite before and after preparing the pellets by using SPS Method
  4. Calculated the density by using both physical and experimental technique and then compared with theoretical density
  5. Did SEM-EDX analysis for identifying the composition of various phases present inside the pellets
  6. Performed TEM analysis on all the 4 pellets.
- **Conclusion: -**Concluded that the presence of GDC decreases the density and hardness of pure YSZ.
  -Concluded that the presence of Ceria leads to the formation of cracks in the pellet may be because of the expansion of the ceria while cooling during the SPS process.
- **Future Scope:** Ionic Conductivity can be measured by using Impedance spectroscopy method and can be compared to see the relative effect on doping various compounds in YSZ

B-tech-Project 2: Simulation of electrolyte material used in solid oxide fuel cell (Dec12-present)

- **Objective: To see and generate the pseudo-potential** for of 8% YSZ; 8%YSZ+ Ceria; 8% YSZ+GDC and 8%YSZ+ Ceria+GDC and then observe the various electronic properties like Radial distribution function, electronic configuration, locating exact oxygen vacancies in the composite etc.
- **Procedure to be followed:**
  1. Composites of various composition prepared for generating the pseudo-potential
  2. Using SEISTA software to generate the pseudo-potential for all the composites
- **Conclusion:** The project is under progress and expected to finish by the end of April'13

Project: Analysis of various Illumination and contrast methods in Optical Microscopy (Jan 12-May 12)

- It is successfully completed under the guidance of Prof. Anandh Subramaniam, Department of MME,IIT Kanpur
- **Objective:** Analysis of various Illumination and contrast methods in Optical Microscopy
- **Procedure followed:**
  1. The samples used were Dirty water and bone implants since they are raw and easily available
  2. Used the biological optical microscope to analyse since we have selected a sample which has lot of biological species
  3. Captured the images in various modes like Bright Filed, Dark Field, Phase contrast, Polarized light microscopy, and differential interference contrast microscopy in order to see the behaviour clearly
  4. Used same region to show the comparison (advantages) of these techniques, both transmission and reflection modes
- **Conclusion:** Compared and shown the importance of various modes of optical microscopy by using the images taken under various modes in Optical microscope.

Project: Microstructure analysis of PFZ (Precipitated Free Zones) using FESEM (Nanomaterial) (Oct 11-Nov 11)

- It is successfully completed under the guidance of Prof. Anandh Subramaniam, Department of MME,IIT Kanpur
- **Objective:** To analyse the microstructure of PFZ in Mg-Al-Zn alloy using FESEM
- **Procedure followed:**
  1. prepared a sample for the FESEM which is a very sophisticated job
  2. Observed the microstructure and performed the EDX (Energy dispersive X-ray Analysis)
- **Conclusion** : Concluded the presence of nano size PFZ around grain boundaries lowers the hardness of Mg-Al-Zn alloy

TECHNICAL SKILLS AND LABORATORY EXPERIENCE

Operating System: Ubuntu (Linux), WINDOWS 7

Languages: C, basic C++, HTML, Python

Technical Software Knowledge: SIESTA, ORIGIN, CARINE, MATLAB, AutoCad, CS5.

Experimental Skills: Optical Microscopy, XRD, SEM, TEM, AFM, Rockwell Hardness, Vickers Hardness, Spark plasma sintering etc.

RELEVENT COURSES DONE

Courses	Grade	Courses	Grade
1) Mechanical Behaviours of Materials	**A**	**9)** Multi-functional oxides:thin films & devices	**B**
2) Phase Equilibria in Materials	**A**	**10)** Phase transformation in materials	**B**
3) Nanostructures and Nanomaterials: Characterization & Properties	**B**	**11)** Electronic and magnetic properties of materials	**B**
4) Metallurgical Kinetics	**B**	**12)** Fundamentals of materials processing	**B**
5) Materials Characterization	**B**	**13)** Manufacturing processes	**B**
6) Principles of metal extraction and refining	**B**	**14)** Process metallurgy lab	**B**
7) Structural characterization techniques & their applications	**B**	**15)** Physical Metallurgy lab	**B**
8) Materials for semiconductor industry*		**16)**Materials degradation and its prevention*	

* Courses under progress

KEY EXTRACURRICULAR ACHIEVEMENTS

SPORTS	• **AWARDED INSTITUTE BLUES,** for the year 2013 by Games & sports Council, IIT Kanpur. - An award **given for excellent organizational, leadership & consistent performance in sports** throughout the stay at IITK -This year(2013), it is awarded to only 1 person out of around more than 1000 students - Details can be found at http://www.iitk.ac.in/math/staff/Test/PES/pdf/General_Guidelines.pdf • **Awarded twice Best Athlete Awards** in Udghosh (Annual Sports Festival of IIT Kanpur)-2010 & 2011 • **BEST Incoming Sportsperson Award.** It is awarded to only 10 out of 700 students by the students Gymkhana, Games & sports council IIT Kanpur-2009 • Won **12 GOLD, 4 SILVER & 4 BRONZE Medals in** various **athletics meet** (Inter IIT sports meet, Udghosh, District Athletics meet, Regional & Cluster Athletics meet in 2011,'10,'09 & 2004) in events **400m,800m,1500m & 5Km**
SOCIAL & NATIONAL SERVISES	• **Awarded THE RAJYA PURASKAR-2007** by the Bharat Scouts & Guides (awarded for excellence in social work) • Qualified and Attended **THAL SAINIK CAMP (TSC-2006).**Only **40 NCC Cadets qualified out of 50000** and represented the Maharashtra state which was organised by **DIRECTORATE GENERAL NCC at NEW DELHI**
MUSIC	• **Awarded 2nd Prize in** Pair on the stage (Musicals) in Galaxy (Intra IIT cultural festival) in 2011 at IIT Kanpur • **Awarded 1st Prize** in group song and eastern band competition in Galaxy 2010 and 2011 respectively