Osama Gaballa, Ph.D.

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Skills Profile

- PhD in Materials Science & Engineering
- 5 years teaching experience
- 10 years Research experience
- Experience Team player
- 12 years Laboratory experience
- Click here for my Google Scholar page

Academic Background

Postdoctoral Research Associate

Materials Science and Engineering Department, Iowa State University, Ames, IA, USA, 2013

PhD, Materials Science and Engineering, Iowa State University, Ames, IA, USA, 2009-2012

Thesis: Processing development of 4TaC-HfC and related carbides and borides for extreme environments

Advisor: Professor Alan Mark Russell

Click here for my dissertation

Masters of Science, Metallurgical Engineering, Cairo University, Egypt 2003-2006

Thesis: Effect of various binder metals on tungsten carbide properties

Advisors: Professor Sayed Farag and Professor Zeinab Abdel Hamid

Click here for my thesis

Bachelor of Science, Metallurgical Engineering, Cairo University, Egypt 1995 – 2000

Work Experience

Assistant Professor, ME department, King Fahd University of Petroleum and Minerals-Hafr AlBatin campus, 2014-2016

• Teach courses for Mechanical Engineering, Mechanical Engineering Technology students, and Preparatory year students

• Provide academic advising for Mechanical Engineering and Preparatory year students

• Supervise senior projects of Mechanical Engineering Technology students

• Served on various committees, including; Workshop and Safety, Planning, Recruitment, Lab/Workshop Purchasing and ABET accreditation

• Prepare labs including the MSE lab and thermos-fluid lab.

Postdoctoral Research Associate, MSE department, Iowa State University, Ames, IA, USA 2013

• Perform the research required by the faculty supervisor

• Prepare and characterize lithium thin film electrolytes for solid state Li-ion batteries

• Collaborate with faculty supervisors, other postdocs, graduate students, and undergraduate students

• Manage projects and research labs

• Deliver research seminars

PhD Student Associate, Ames Laboratory, U.S. Dept. of Energy, Ames, Iowa, USA 2009-2012

• Perform research as requested by the Faculty Supervisor

• Prepare and characterize carbides and borides

• Work in a cooperative manner with the faculty supervisor and postdocs, other graduate students, and undergraduate students

• Manage projects and a lab

• Deliver research seminars

Teaching Assistant, Central Metallurgical Research & Development Institute (CMRDI), Cairo, Egypt 2006-2008

• Teach powder metallurgy related labs and courses

• Perform powder metallurgy related research

• Manage processing and characterization powder metallurgy labs

Research Assistant, CMRDI, Egypt **2003-2006**

• Perform powder metallurgy related research

• Manage processing and characterization powder metallurgy labs

Production Engineer, Ezz Flat Steel Company, Egypt **2002-2003**

• Install continuous casting machine

• Streamline the flat steel production process

• Supervise the technician and other workers

• Provide technical support and training for technicians and other workers

Research Interests and Skills

a. Research Interests:
   - Powder metallurgy, mechanical alloying, and development of unique metastable compounds by solid state synthesis
   - Processing development of carbides and borides, structure and properties of ultra-hard and degradation-resistant materials
   - Thin film coatings for high contact stress applications, powder coatings, RF sputtering and lithium ion thin film battery
   - Nano structured advanced materials

b. Research Skills: I am good user of
   - Scanning Electron Microscopy (SEM) and Energy Dispersive Spectroscopy (EDS),
   - X-ray Diffraction (XRD),
   - RF sputtering, and pulsed laser deposition,
   - Hot press, and Spex mixer/mill,
   - Vickers micro-hardness tester, and erosion tester Microblaster,
   - Metallographic apparatus, powder flow rate and apparent density,
   - Water atomization, Raman Spectrometer and
   - Different compaction and sintering equipment

c. Language Skills
   - Arabic; Native speaker
   - English; Fluent

d. Other
   - Full Driving License

Projects

1. Preparation and characterization of lithium thin film electrolytes grown by RF sputtering for solid state Li-ion batteries. ISU, Ames, IA, USA, Feb.2013, to August 2013.

2. Ultracoatings - Enabling Energy and Power Solutions in High Contact Stress Environments, U.S. Department of Energy, ISU, Ames, IA, USA, 2010 – 2011.

3. Advanced wear resistant nanocomposites for increased energy efficiency, U.S. Department of Energy, ISU, Ames, IA, USA, 2009- 2010.

4. Processing of Chamfer knives made from tungsten carbide for El-Naser Casting Company, CMRDI Egypt, 2006-2008.

5. Processing of Wigglers and Wiggler-pins for Lord international Company, CMRDI, Egypt, 2006-2008.

6. Processing of bronze, iron, copper metal powder for various Egyptian companies, CMRDI, Egypt, 2003-2008.

7. Processing of PM spare parts for various Egyptians engineering companies, CMRDI, Egypt, 2005 -2008.

8. Processing of tungsten-copper electrical contacts and substrates for Egymac Company, CMRDI, Egypt, 2004-2006.

9. Processing of tungsten carbide tips for quartz milling machine for El Hamd Co., CMRDI, Egypt, 2005 -2008.

10. Processing of tungsten carbides cutters for Egyptian Westren Tobacco Company, CMRDI, Egypt, 2006-2008.

11. Nano- sized copper -based alumina composites, Joint US/Egypt Research Projects program, CMRDI, Egypt, 2005-2007.

Awards and Scholarships

1- The Egyptian Higher Education Scholarship for Studying Abroad 2008 – 2012.

2- Doctoral Academic Achievement Scholarship for the Fall 2008 and Spring 2009 semesters, University of North Texas, USA.

3- Doctoral Academic Achievement Scholarship for the Fall 2009 and Spring 2010 semesters, University of North Texas, USA.

4- Travel grants for

1- International Summer School in Materials Processes
Dates: 2 June- 30 July, 30, 2005. Location: KTH, Stockholm, Sweden

2- Summer School on Materials and Structures for Hypersonic Flight
Dates: August 14 - 26, 2011. Location: University of California, Santa Barbara, USA

Given presentations and Poster Session

1. "Thin-film electrolytes of Lithium Phosphate glasses prepared by RF magnetron sputtering" **Osama Gaballa**, Iowa Glass conference, Coe College, July 29, 2013

2. "Processing and consolidation of ultra-refractory 4TaC-HfC at relatively low temperatures" **Osama Gaballa**, Bruce Cook, Alan Russell, Summer School on Materials and Structures for Hypersonic Flight, Santa Barbara, August 14 - 26, 2011

3. Synthesis of Tungsten Carbide-Base Nanocomposite Powders by a Novel Method, Sayed F. Moustafa, Z. Abdel-Hamid, **U Gaballah**, Fourth Japanese-Mediterranean Workshop on Applied Electromagnetic Engineering for Magnetic, Superconducting and Nano Materials, September 17-20, 2005.

Publications

Refereed Journal Articles

1- "Synthesis of WC hard materials using coated powders", S.F. Moustafa, Z. Abdel-Hamid, **Osama G. Baheig** and A. Hussien**,** Advanced Powder Technology 22 (2011) 596–601

2- "Formation, densification, and selected mechanical properties of hot pressed Al_4SiC_4, Al_4SiC_4 with 30 vol. % WC, and Al_4SiC_4 with 30 vol. % TiC." **Osama Gaballa**, Bruce Cook, Alan Russell, Ceramics International 37 (2011) 3117–3121.

3- "Properties of $AlMgB_{14}$ hot pressed with additions of ZrB_2 and HfB_2", **Osama Gaballa**, Jonathan Ball, Peters J.S, Bruce Cook, Alan Russell, Powder Technology, 235 (2013) 968–974.

4- "Reduced-temperature processing and consolidation of ultra-refractory Ta_4HfC_5", **Osama Gaballa**, B.A. Cook, Joel Harringa, and A. M. Russell, International Journal of Refractory Metals and Hard Materials. Int. Journal of Refractory Metals and Hard Materials 41 (2013) 293–299.

Conference Articles

5- "Consolidation of WC Hard Materials Through Coated Powder Approach", in proc. "7th Egyptian-Syrian Conf. in Petroleum and Chemical Eng.", Faculty of Eng., University of Swiss Canal, Oct 29-31, Suez City, Egypt, 2007, pp.ME3 **Osama G. Baheig**, Z. Abdel-Hamid, A. Hussien, S.F.Moustafa.

Patents

6- U.S. Patent "Ultra-Refractory, Wear-Resistant Borides and Composites Thereof,"; Cook B.A., Harringa J.L., Russell A.M., Austin Shaw, and **Osama Gaballa** (ISURF #03942, submitted June 2011).

Reviewer for:

• Surface and Coatings Technology

Volunteer Work

Treasurer of Egyptian student association, ISU, Ames, Iowa, 2010-2011

President of Egyptian student association, ISU, Ames, Iowa, 2011-2012

Appendex1: Detailed Teaching Experience and Committee Work

1- MSE 610, Academic Teaching Practices, (grad A), Iowa State University, Fall 2011

2- A guest lecturer, Mat E 215, Introduction to Materials Science and Engineering I, Iowa State University**,** Fall 2012

3- Assistant professor, Mechanical Engineering department, King Fahd University of Petroleum and Minerals (Hafr Al Batin campus) then University of Hafr AlBatin 08/2014-08/2016

Year/ Sem.	No of Sects	Course No	Lec. Hrs	Lab. Hrs	Course Title	Enroll-ment	Funct-ion	Student Evaluation	
								No of stu. responded	Score
152		MET 177		3	Material Science Technology	18	18		
152		ME 204	3		Thermodynamics II	17	17		
152		NDE 100	2		Introduction to NDT	06	06		
151	05	ME 003		2	Preparatory Engineering Technology	24	16	10	9.50
151	09	ME 003		2	Preparatory Engineering Technology	15	11	11	9.60
151		ME 216	3		Materials Science and Engineering	13	13	11	9.20
151		MET 229	2		Industrial Hydraulics & Pneumatics	08	08	05	9.20
142		ME 204	3		Thermodynamics II	12	12	10	9.49
142	195	ME 003		2	Preparatory Engineering Technology	17	13	12	9.0
142	247	ME 003		2	Preparatory Engineering Technology	15	10	08	9.61
142		MET 123	3		Applied Thermo fluids	06	06	04	9.51
141		ME 203	3		Thermodynamics I	13	13	08	9.52
141		MET 229	2	3	Industrial Hydraulics & Pneumatics	13	13	11	9.99
141		MET 228	3	3	Thermal Systems Performance	12	12	10	9.97

Committee work:

Formed by
D: Department
C: College
U:University

Position
M: Member
C: Chairman

Name of Committee	Starting Semester	Academic Year	Formed by	Position
Planning committee	141	2014	U	M
CAC/ABET	141	2014	D	C/M
Website	152	2015	D	C/M
Workshop & Safety	151	2015	D	C/M
AD/BS Lab/Workshop Purchase	142	2014	D	M
Recruiting	142	2015	D	M