

*Fuel Cell Laboratory (Room 6-112)
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Amir Reza Hanifi

Qualifications

More than 13 years of work and research experience in academia and industry on refractories, cement, concretes, glasses, powders and engineering ceramics.

Education

Post Doctorate Program in Materials Engineering (Advanced Ceramics)

Since February 2009, University of Alberta (U of A), Department of Chemical and Materials Engineering, Edmonton/Canada

PhD in Materials Engineering (Ceramics and Glasses)

January 2009, University of Limerick (UL), Department of Civil Engineering and Materials Science, Limerick/Ireland

B. Sc. in Materials Engineering (Ceramics)

February 2001, Iran University of Science & Technology (IUST), Department of Materials Science and Metallurgical Engineering, Tehran/Iran

Achievement Highlights

- Fabrication of the first Canadian-fabricated tubular fuel cell stack (electrical power generator)
- Development of a new generation of tubular fuel cells (redox resistant)
- Development of biomedical glasses and glass-ceramics with enhanced mechanical properties
- Reduction of refractory (bricks and castables) consumption in the steel industry

Professional Experience

Post Doctorate Program

- Development of Porous Electrolyte-Supported Tubular Ceramic Fuel Cells.

Since February 2009, University of Alberta & Alberta Innovates-Technology Futures, Edmonton/Canada

PhD Program

- Glass Formation, Properties, Crystallization and Bioactivity of Ca-Si-Al-O-N-F Glasses: Effects of Nitrogen and Fluorine.

July 2005-January 2009, University of Limerick, Limerick/Ireland

Research Assistant

- Simulation of the Thermo-Mechanical Behavior of Refractories Used in Steel Ladles by Finite Element Method (FEM).

April 2004-July 2005, Isfahan Steel Company, Isfahan/Iran

Refractory Research Group (RRG) at IUST

- Studying the Different Refractory Bricks and Castables Used in Converters, Electric Arc Furnaces and Ladles of Isfahan and Mobarakeh Steel Companies in Order to Improve Their Performance through Controlling The Corrosion and Erosion Rates.

February 2001-April 2004, Isfahan/Iran

B. Sc. Final Year Project

- Microstructural Analysis of MgO-C Composite Refractories Used in EAF.

February 2001, IUST, Tehran/Iran

Industrial Experience

Mobarakeh Steel Company (2 years)

Isfahan Steel Company (3 years)

Skills and Expertise

Forming of advanced ceramics (slip casting, hot and cold isostatic pressing, tape casting and screen printing), dip coating, spray coating, electrophoretic deposition, engineering the microstructure, infiltration of porous ceramics with nano-particles, glass melting, crystallization of glass-ceramics, casting of refractory concretes, glass ionomer cements, oilfield cements, ceramics corrosion mechanisms.

Characterization Techniques

Glasses/Ceramics and Refractories/Fuel Cells: XRD, XRF, ICP, DTA/TGA, DSC, Dilatometry, BET, Particle size and Zeta potential analysis, Viscosity measurement, In-situ high temperature XRD, Thin-film XRD, SEM, TEM, Mechanical properties, FTIR, Raman Spectroscopy, Bio-activity of materials, Fuel cell electrochemical performance testing.

Other Experiences

Project and time management, emotional intelligence (EI), leadership of medium size research groups, technical training and supervision of M. Sc. and PhD students, project funding management, writing technical reports for the industry and Canadian government organizations, monitoring health and safety regulations in the lab, team working within and outside Canada (USA, UK, Spain).

Work Interests

Ceramic fuel cells, inorganic membranes, advanced glasses and glass-ceramics, high temperature ceramics and refractories, advanced cements and concretes, ceramic coatings, mechanical properties of ceramics and glasses, corrosion and erosion of ceramics.

Publications and Presentations

More than 20 articles in peer-reviewed journals, 3 articles in commercial magazines and 16 articles in international conferences. Details of these articles can be found at:

<http://www.ualberta.ca/~hanifi/Publications.htm>

More than 20 presentations in university, international conferences and in the steel industry. Title, place and date of each talk can be found at:

<http://www.ualberta.ca/~hanifi/Presentations.htm>

Awards and Offers

January 2011, SOFCC network international visiting award for visiting Lawrence Berkeley National Laboratory, Berkeley/California.

June 2007, Representative of UK and Ireland in the student speech competition of the 10th European Ceramic Society Conference, 4th rank in Europe, Berlin/Germany.

2004-2005, PhD program offers with financial support by the University of Limerick /Ireland, University of Missouri-Rolla/USA, University of British Columbia/Canada, University of McMaster/Canada and PhD admission by the University of Birmingham/England.

1998-2000, Distinguished B.Sc. student

References

1. Prof. Thomas Etsell

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2. Dr. Partha Sarkar

Alberta Innovates Technology Futures.

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