

# Mohammad Reza Barati

### +989127949563 (Moblie)

Emails: <u>Barati.78@gmail.com</u>, <u>mrbarati@ut.ac.ir</u>, <u>Mohammad.Barati@irost.ir</u> LinkedIn: <u>https://www.linkedin.com/in/mohammad-reza-barati-4b833a100/</u> Academic staff (Profile page): <u>https://irost.org/academic-staff</u> ORCID Link: <u>https://orcid.org/0000-0001-9204-4841</u>

## Education

- **PhD degree in Materials Science and Engineering (Nanomaterials)** Monash University, Melbourne, Australia (November 2010 – May 2014) *Title of thesis: Fabrication of 1st order metallic magnetic materials for magnetic heating applications*
- Master's Degree in Engineering (Biomaterials) Before mid-candidature exam Monash University, Melbourne, Australia (April 2009 November 2010)
- Master's Degree in Materials Science and Engineering University of Tehran, Tehran, Iran (September 2003 – October 2006) *Title of thesis: Effect of additional elements on synthesis process and magnetic properties of nickel ferrite nanopowder by sol-gel auto combustion*
- Bachelor's Degree in Materials Engineering (Industrial Metallurgy)
   Azad University, Saveh, Iran (1997-2002)
   Title of thesis: The influence of the mould block inoculation on the microstructure and mechanical properties of
   Gray Cast Iron

## Employment history and Postdoctoral Fellow Positions

- Assistant Professor (Academic Staff) Department of Advanced Materials and New Technologies, Iranian Research Organization for Science and Technology (IROST), Tehran, Iran (January 2024 – Now)
- Invited Lecturer (Alborz Campus) and Research Advisor Department of Materials science and Engineering, University of Tehran, Tehran, Iran (July 2022 - Now)
- Postdoctoral Research Fellow (Level A Grade 6) College of Science and Engineering, Flinders University, South Australia, Australia, (April 2019 – July 2022).
- **Postdoctoral Research Fellow (Level A)** School of Chemical Engineering, The University of Adelaide and UniSA in collaboration with GOT Company, South Australia, Australia (01 July 2018 – 20 January 2019)
- Postdoctoral Research Fellow (Level A) Department of Mechanical Engineering, The University of Melbourne, Melbourne, Victoria, Australia (17 July 2017 – 17 July 2018)
- Lecturer (topic of Solid Mechanics) School of Computer Science, Engineering and Mathematics, Flinders University, South Australia, Australia, (Semester 1 and 2, 2016 and Semester 1, 2017)
- **Teaching assistant (Materials Engineering and Advanced Materials)** School of Chemical Engineering, the University of Adelaide, South Australia, Australia, (Semester 1, 2016 and Semester 1, 2017)
- Postdoctoral Research Associate (Level A) School of Computer Science, Engineering and Mathematics, Flinders University, South Australia, Australia, (April 2015 – July 2015)
- Academic Research Assistant Department of Civil Engineering department, Monash University, VIC, Australia, (22 April 2013 – 07 October 2014)
- Lecturer (Academic Staff) Department of Metallurgy and Materials Engineering, Azad University, Saveh branch, Saveh, Iran (01 February 2006 – 23 July 2008)
- Lecturer (Academic Staff)

• SAMA Technical and Vocational Training Institute – Saveh branch, Iran (February 2006 – July 2007)

## Publications

### Patent

**1. Mohammad Reza Barati**, Kiyonori Suzuki, Cordelia Selomulya, "*Magnetic materials for heating*", Institute: Monash University, Country: Australia. Application number: 2013905012, Monash Reference Number: WS 2013-034-01, 2013.

#### **Book (Principal Author)**

**Mohammad Reza Barati**, and Abbas khanmohammadian, "*Experiments of heat treatment (Principles and Application*)", ISBN: 978-964-223-105-8, 1<sup>st</sup> published in 2009, 3<sup>rd</sup> in 2012 by Azad University.

#### Journal Articles (selected papers)

#### Journal Articles (selected papers)

Technology, 284, 2015, pp.541-550.

<b>30.</b> Mohammad Hossein Golbabaei, Mohammadreza Saeidi Varnoosfaderani, Farshid Hemmati, <b>Mohammad Reza Barati</b> , Fatemehsadat Pishbin, Seyyed Ali Seyyed Ebrahimi, Machine learning-guided morphological property prediction of 2D electrospun scaffolds: the effect of polymer chemical composition and processing parameters, RSC advances 14 (22), 15178-15199.	IF: 3.9
<b>29.</b> Nilufar Balighieh, Mohammad Reza Zamani, Seyed Farshid Kashani-Bozorg, Mehdi Kheradmandfard, <b>Mohammad Reza Barati</b> , Eghbal Mansoori, Optimizing microwave-assisted synthesis of akermanite nanoparticles using citric acid as a chelating	IF: 6.4
<ul> <li>agent: A combined machine learning and experimental approach, Journal of Materials Research and Technology, 30, 2211-2222</li> <li>28. N. Balighieh, S.F. Kashani-Bozorg, M. Kheradmandfard, M.R. Barati, "Facile synthesis of akermanite powder using microwave-assisted sol–gel method for biomedical applications", Volume 58, pages 17066–17079, (2023), https://doi.org/10.1007/s10853-023-09099-7</li> </ul>	IF: 4.5
<b>27.</b> Mehdi Kheradmandfard, Seyed Farshid Kashani-Bozorg, <b>Mohammad Reza Barati</b> , Sara Sarfarazijami, "A novel strategy for fast and facile synthesis of bioactive bredigite nanoparticles using microwave-assisted method", Journal of Materials Research and Technology, Volume 25, July–August 2023, Pages 1735-1747, <u>https://doi.org/10.1016/j.jmrt.2023.05.274</u> .	IF: 6.4
<b>26.</b> Shahjouei, S., <b>Barati</b> , <b>M.R</b> . & Tooski, M.Y. High Velocity Impact Response and Damage Mechanism of an Aluminium/Glass-Carbon Fiber/Epoxy Composite Plate Reinforced with Graphene Nano-plates. Fibers Polym 22, 480–488 (2021). https://doi.org/10.1007/s12221-021-0105-z	IF: 2.34
<b>25.</b> A.R. Chaharmahali, <b>M.R. Barati</b> , K. Suzuki, G.P. Simon, H. Wang, "Fast deswelling of nanocomposite polymer hydrogels via magnetic field-induced heating for emerging FO desalination" <i>Environmental Science &amp; Technology</i> , 2013, 47 (12), pp. 6297–6305.	IF: 11.36
<b>24. M.R. Barati</b> , C. Selomulya, K.G. Sandeman and K. Suzuki, "Extraordinary induction heating effect near the first order Curie transition", <i>APPLIED PHYSICS LETTERS</i> 105, 162412 (2014).	IF: 3.97
<b>23. Mohammad Reza Barati</b> , Cordelia Selomulya, Kiyonori Suzuki, "Particle size dependence of heating power in MgFe <sub>2</sub> O <sub>4</sub> nanoparticles for hyperthermia therapy application", <i>Journal of Applied Physics</i> , 115, 17B522 (2014)	IF: 2.87
<b>22. M.R. Barati</b> , "Influence of zinc substitution on magnetic and electrical properties of nanocrystalline MgCuZn ferrite prepared by sol-gel auto combustion method", <i>Journal of Alloys and Compounds</i> , 478 (2009) 375–380.	IF: 6.37
<b>21.</b> A. Zafari, <b>M. R. Barati</b> , K. Xia, "Controlling martensitic decomposition during selective laser melting to achieve best ductility in high strength Ti-6Al-4V", <i>Materials Science and Engineering: A</i> , Volume 744, 28, 2019, Pages 445-455, https://doi.org/10.1016/j.msea.2018.12.047.	IF: 6.04
<b>20.</b> Shaheer Makar, Arash Mazinani, <b>Mohammad Reza Barati</b> , Dusan Losic, "Engineered titanium implants for localized drug delivery: recent advances and perspectives of Titania nanotubes arrays", <i>Expert Opinion on Drug Delivery</i> , 2018;15(10):1021-1037. doi: 10.1080/17425247.2018.1517743.	IF: 8.12
<b>19.</b> Reza H Oskouei, <b>Mohammad Reza Barati</b> , Hamidreza Farhoudi, Mark Taylor, Lucian Bogdan Solomon, "A new finding on the in- vivo crevice corrosion damage in a CoCrMo hip implant", <i>Materials Science and Engineering: C</i> , Volume 79, 2017, Pages 390–398.	IF: 7.32
<b>18.</b> Asghar H. Korayem, <b>Mohammad Reza Barati</b> , George P. Simon, Xiao Ling Zhao and Wen Hui Duan, "Reinforcing brittle and ductile epoxy matrices using carbon nanotubes masterbatch", <i>Composites Part A: Applied Science and Manufacturing</i> , 61 (2014) pp. 126–133.	IF: 9.46
<b>17.</b> Shu Jian Chen, Cheng Yu Qiu, Asghar H. Korayem, <b>Mohammad R. Barati</b> , Wen Hui Duan, "Agglomeration process of surfactant- dispersed carbon nanotubes in unstable dispersion: A two-stage agglomeration model and experimental evidence", <i>Powder Technology</i> , Volume 301, November 2016, Pages 412–420.	IF: 5.64
<b>16.</b> Asghar H. Korayem, <b>Mohammad Reza Barati</b> , George P. Simon, Tim Williams, Xiao Ling Zhao, Pieter Stroeve and Wen Hui Duan, "Transition and stability of copolymer adsorption morphologies on surface of carbon nanotubes and implications on their dispersion", <i>Langmuir</i> , 2014, 30(33), pp. 10035–10042, DOI: 10.1021/la502245s.	IF: 3.683
<b>15.</b> Asghar H. Korayem, <b>Mohammad Reza Barati</b> , Shu Jian Chen, George P. Simon, Xiao Ling Zhao, Wen Hui Duan, "Optimizing the degree of carbon nanotube dispersion in a solvent for producing reinforced epoxy matrices", <i>Powder</i>	IF: 5.64

14. Z. Sadighi, A. Ataie, and M.R. Barati, "Effects of Heat treatment on Magnetic Characteristics of Mechano-	IF: 5.64
Inermany Synthesized Nano-Structured La0.8Ba0.2MinO3, Powder Technology, Vol. 249, 2015, pp. 412–418.	
<b>13.</b> Abouzar Sohrabi, Abolghasem Dolati, Mohammad Ghorbani, <b>Mohammad Reza Barati</b> , and Pieter Stroeve, "Elucidation of the Structural Texture of Electrodenosited Ni/SiC Nanocomposite Coatings" <i>Physical Chamistry C</i> 116 (6)	IF: 4.12
2012 pp 4105 4118	
12 M B Baroti "Characterization and preparation of nanocrystalline MaCuZn farrite powders synthesized by sol. gal auto.	HE 2 (0
combustion", Sol-Gel science and Technology, (2009), 52:171–178.	IF: 2.00
11. M.R. Barati, S. A. Seyyed Ebrahimi and A. Badiei, "The Role of Surfactant in Synthesis of Magnetic Nanocrystalline	IF: 4.45
Powder of NiFe2O4 by Sol-Gel Auto-Combustion Method", Non-Crystalline Solids 354 (47-51), (2008), pp. 5184-5185.	
10. J. Azadmanjiri, H.K. Salehani, M.R. Barati, F. Farzan, "Preparation and electromagnetic properties of Ni <sub>1-x</sub> Cu <sub>x</sub> Fe <sub>2</sub> O <sub>4</sub>	IF: 3.57
nanoparticle ferrites by sol-gel auto-combustion method", Materials Letters, Volume 61, Issue 1, 2007, pp 84-87.	
9. S. M. Salili, A. Ataie, M.R. Barati, Z. Sadighi, "Characterization of mechano-thermally synthesized Curie temperature-	IF: 4.53
adjusted Lao.8Sro.2MnO3 nanoparticles coated with (3-aminopropyl) triethoxysilane", Materials Characterization, 106	
(2015) 78–85.	
8. Z. Sadighi, A. Ataie, and M.R. Barati, "Synthesis of Nano-Structured La <sub>0.8</sub> Ba <sub>0.2</sub> MnO <sub>3</sub> Perovskite via Mechano-Thermal	IF: 3.45
Route",	
Metals and Materials International, Vol. 20, No.1, (2014), pp 77-81.	
7. Reza H. Oskouei, Mohammad Reza Barati, and Raafat N. Ibrahim, "Surface Characterizations of Fretting Fatigue	IF: 3.74
Damage in Aluminum Alloy 7075-T6 Clamped Joints: The Beneficial Role of Ni–P Coatings", <i>Materials</i> , 2016, 9(3),	
141; doi:10.3390/ma9030141	
6. R. H. Oskouei, R. Ibrahim, M.R. Barati, "An experimental study on the characteristics and delamination of TiN	IF: 2.35
coatings deposited on AI 70/5-16 under fatigue cycling", Thin Solid Films, Vol 526, 2012, pp. 155–162.	
<b>5. Mohammad Reza Barati</b> , Kiyonori Suzuki, Cordelia Selomulya, and José S. Garitaonandia, "New $T_c$ -tuned manganese	IF: 1.84
ferrite-based material as potential magnetic implant for hyperthermia therapy application", IEEE TRANSACTIONS	
<i>ON MAGNETICS</i> , Vol. 49, 2013, pp. 3460-3463.	
4. M.R. Barati, S. A. Seyyed Ebrahimi, and R. Dehghan, "Influences of precursors molar ratio and basic agent on	IF: 1.84
processing of Nickel-Zinc ferrite nanopowders by a Sol-Gel Auto-Combustion method", IEEE TRANSACTIONS ON	
MAGNETICS, Vol. 45, NO. 6, 2009, pp. 2561-2564.	
<b>3. M.R. Barati</b> , S. A. Seyyed Ebrahimi and A. Badiei, "Influence of pH on Physical Properties of Nickel-Zinc Nanocrystalline	IF: 1.40
powders Synthesized by a Sol-Gel Auto-Combustion Method", <i>Modern physics B</i> , Vol. 22, Nos. 18 & 19, (2008), pp. 3153-	
3158.	
2. Parisa Moazzam, Amir Razmjou, Mohammad Reza Barati, and Rasoul Shafiei, "Superhydrophobic Modification of	IF: 3.15
Aluminum Surface: The Role of Surface Chemistry and Structure on the Biological Interactions", International Journal of	
Advances in Science Engineering and Technology, ISSN: 2321-9009, 2, 2016, 45–50.	
<b>I. M.K. Barati</b> , S. A. Seyyed Ebrahimi and A. Badiei, "Influence of Different Calcination Conditions on the Microstructure	IF: 0.49
and Phase Constitution of Nickel-Linc Ferrite Nanocrystalline Powders Prepared by a Sol-Gel Auto-Combustion Method", Key Engineering Materials Vols 368-372 (2008) pp 508-600	
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#### **Conference Papers**

11. Hossein Ahmadi, **Mohammad Reza Barati**\*, Seyyed-Farshid Kashani Bozorg, Influence of Zinc Content on the Morphology and the Antimicrobial Activity of Magnesium Ferrite Nanoparticles, *The 14th Biennial Congress of Iranian Ceramic Society and the 4th International Conference on Ceramics*, 2024, Tehran, Iran. (Status: Accepted)

**10.** PARISA MOAZZAM, AMIR RAZMJOU, **MOHAMMAD REZA BARATI**, and RASOUL SHAFIEI", Superhydrophobic Modification of Aluminum Surface: The Role of Surface Chemistry and Structure on the Biological Interactions", *IIER 19<sup>th</sup> International Conference on Social Science and Economics (ICSSE)*, Melbourne, Australia 30th December 2015.

**9. M.R. Barati**, S. A. Seyyed Ebrahimi, and A. Badiei, "Influence of the metal nitrates to citric acid molar ratio on the processing of nickel zinc ferrite nanocrystalline powders synthesized by a sol-gel auto combustion method", International Conference on Nanoscience and Nanotechnology, Shah Alam, Selandor (Malaysia), *AIP Conference Proceedings* 1136, 2008, pp. 509-513.

**8.** M.R. Barati, Kiyonori Suzuki, Cordelia Selomulya, and José S. Garitaonandia, "New *T<sub>c</sub>*-tuned manganese ferrite-based material as potential magnetic implant for hyperthermia therapy application", *12<sup>th</sup> Joint MMM-Intermag Conference*, Chicago, January 2013, Illinois, USA (Accepted).

**7. M.R. Barati**, S. A. Seyyed Ebrahimi and A. Badiei, "Influences of Precursors Molar Ratio and Basic Agent on Processing of Nickel- zinc Ferrite Nanopowders by a Sol-gel Auto-combustion Method", presented in *Soft Magnetic Materials conference (SMM 18)*, 2<sup>nd</sup>–5<sup>th</sup> September (2007), Cardiff School of Engineering, Cardiff, UK.

**6. M.R. Barati**, S. A. Seyyed Ebrahimi and A. Badiei, "Optimization of the quantity of surfactant in synthesis of Nickel-zinc Ferrite Nanopowders by a sol-gel Auto-combustion Method", 6<sup>th</sup> Iranian ceramic conference, May 2007, Materials research center (MERC), Karaj, Iran.

**5. M.R. Barati**, S. A. Seyyed Ebrahimi and A. Badiei, " An investigation on the effect of stirring condition on the formation temperature and crystallite size of nickel zinc ferrite nanopowders prepared by sol-gel auto-combustion method", *10<sup>th</sup> annual congress of the Iranian Metallurgical Engineer's Society*, November 2006, Ferdowsi University of Mashhad (FUM), Mashhad, Iran.

**4. M.R. Barati**, S. A. Seyyed Ebrahimi and A. Badiei, "Influence of zinc content on the formation temperature and crystallite size of nickel zinc ferrite nanopowders synthesized by sol-gel auto combustion method", *10<sup>th</sup> annual congress of the Iranian Metallurgical Engineer's Society*, November 2006, Ferdowsi University of Mashhad (FUM), Mashhad, Iran.

**3. M.R. Barati**, S. A. Seyyed Ebrahimi and A. Badiei, "Influence of zinc content on phase constitution of Ni-ferrite nanopowders prepared by sol-gel auto combustion method", 9<sup>th</sup> annual congress of the Iranian Metallurgical Engineer's Society, November 2005, Shiraz University, Shiraz, Iran.

**2. M.R. Barati**, S. A. Seyyed Ebrahimi and A. Badiei, "Synthesis of Ni-Zn ferrite nanopowders prepared by sol-gel auto combustion method", 10<sup>th</sup> *annual congress of the Iranian Chemical engineering*, November 2005, Sistan and Balochestan University, Sistan and Balochestan, Iran.

**1. Mohammad Reza Barati**, Farzad Khomamizadeh, Mehrangiz Fazli, "The effect of inoculation temperature and amount of inoculant on chill depth and mechanical properties of chilled gray cast iron", 6 <sup>th</sup> annual congress of the Iranian Metallurgical Engineer's Society, November 2002, Tehran, Iran

#### Under Review Journal papers:

- Sohrab Salimi Bani, Mohammad Reza Barati\*, "A Molecular Dynamics Study of the Interaction between cancer cell DNA and Quercetin", Computational Materials Science, Manuscript Number: COMMAT-D-23-02264.
- 2) Radin Moradi<sup>1</sup>, Hossein Ahmadi<sup>1</sup>, Mohammad Reza Barati\*, Seyed Farshid Kashani-Bozorg, "Development of Ag/Mg<sub>(1-x)</sub>ZnxFe<sub>2</sub>O<sub>4</sub> Nanocomposites via Microwave-Assisted Synthesis: Unprecedented Bacteria Inactivation with Sustained Biocompatibility", Acta Biomaterialia, AB-23-967. (*Note 1: Both authors had equal contributions*).

## Honors and Awards

- Medal prize for the best presentation in15th IIER International Conference on Chemical and Biochemical Engineering (ICCBE), Melbourne, December 30th, 2015.
- Excellent Paper Award for presentation of paper entitled "Superhydrophobic Modification of Aluminum Surface: The Role of Surface Chemistry and Structure on the Biological Interactions", 15<sup>th</sup> IIER International Conference on Chemical and Biochemical Engineering (ICCBE), Melbourne, December 30<sup>th</sup>, 2015.
- **Recognized Reviewer Status**, Awarded by <u>Advanced Powder Technology</u> journal, based on my significant contribution on reviewing massive assignments, I have been awarded this status in 2014.
- Monash Graduate Scholarship (MGS) Awarded by Monash Research Graduate School (MRGS), Monash University, Australia, (April 2009).
- Monash International Postgraduate Research Scholarship (MIPRS) Awarded by Monash Research Graduate School (MRGS), Monash University, Australia, (April 2009).
- University International Postgraduate Award (UIPA) Awarded by Graduate Research School, The University of New South Wales (UNSW), NSW, Australia, (May 2009).
- **Ranked 1st student** among more than 1,036 Iranian Materials Engineering students in Azad University Entrance Master Science Exam, Tehran, Iran (2003).
- **Distinguished Lecturer Award** for Teaching Excellence, Department of Metallurgy and Materials, Azad University, Saveh branch (2007).
- Young researcher Award by the Nanotechnology centre for Excellent scientific and research activates and topquality thesis, Tehran, Iran (2008).
- **Distinguished Research Award** for activities in the field of Nanotechnology by the presidency nanotechnology Development Headquarters, Tehran, Iran (2009).

## Global Reputation of Research Achievements

- <u>Magnetic Material Cooks Cancer (Australian Science News)</u>
- Monash University team uses magnetic materials for cancer treatment (Engineer Australia News)
- Magnetic material attracts attention for cancer therapy (Monash University, Events, and News)
- <u>MAGNETIC MATERIAL'S UNUSUAL HEATING EFFECT COULD FRY CANCER CELLS AT</u> <u>THE PERFECT TEMPERATURE (Originally published by Phys.org, The City University of New</u> <u>York, USA)</u>
- <u>Magnetic nanoparticles to treat cancer (Research Collaboration with University of Tehran, Materials</u>
   <u>Department)</u>

## Research Interests

• Bio-materials • Bio-nanotechnology • Biosensors (lab-on-chip & lab-on-paper)

🔰 Languages

• English (full proficiency) • Persian (full proficiency)

## 🕺 Editorial Board Member

#### **Editorial Member**

Associate Editor, Journal Name: Studies in Engineering and Technology, ISSN 2330-2038 (Print) | ISSN 2330-2046 (Online) | Copyright © Redfame Publishing Inc., USA, Email: set@redfame.com,

#### (http://redfame.com/journal/index.php/set/about/editorialTeam)

#### **Reviewer of Selected Peer-reviewed Journals**

- Materials Research Bulletin
- Advanced Powder Technology (Recognized Reviewer Status in 2014)
- Journal of Science and Engineering B (Recognized Reviewer Status)
- Journal of King Saud University Science
- Physica E: Low-Dimensional Systems and Nanostructures
- Journal of Sol-Gel Science and Technology (one assignment per week @ 2021 and 2022)

#### Referee of Kharazmi International Festival (Section: Advance Materials and Biomaterials) - Will be held on 22<sup>nd</sup> September 2024

• The 37th Kharazmi International Festival (5 foreign assignments and 5 Iranian assignments)

## Industry Experience

- Global Orthopaedic Technology Company Ltd, Adelaide, Australia (July 2018–Jan 2019)
- Fortis Adhesives & Coatings Pty Ltd., Melbourne, Australia (April 2013–Oct 2017)
- Salbin Sanat Tehran Company Ltd, Tehran, Iran (Jan 2002–July 2004 & Oct 2006–Feb 2009)

## Professional training

#### **Biomedical Engineering**

• Basic principles of real-time quantitative PCR–Theoretical and Practical Iranian Biological Resource Center (IBRC), Tehran, Iran (June 2019)

Basic and advanced Animal Cell Culture Training

Bio-summer school, Pasteur Institute of Iran, Tehran, Iran, July 2018

Biochemistry Lab, Monash University, Melbourne, Australia, April 2013

• Isolation of Mesenchymal Stem Cells and Characterization by Flow Cytometry

Bio-summer school, Pasteur Institute of Iran, Tehran, Iran, July 2018

• Working with laboratory animals: general principles and practical considerations

Bio-summer school, Pasteur Institute of Iran, Tehran, Iran, July 2018

Biochemistry Lab, Monash University, Melbourne, Australia, April 2013

#### • Bioinformatics

Iranian Biological Resource Center (IBRC), Tehran, Iran (June 2019)

• Biosafety training course (Module 1 & 2) | Chemical Engineering Department, Monash University, Australia (3 April 2012 and 5 May 2014)

• Cell culturing, in vitro cytotoxicity Assay of nanoparticles

Chemical Engineering Department, Monash University, Australia, April 2012

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• Antibacterial assessment with the bacteria, E. coli (indicative of bacterium lysis), and P. aeruginosa (indicative of bacterium lysis), and S. aureus (indicative of bacterium lysis)
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Chemical Engineering Department, Adelaide University, Australia, May 2018

#### Demonstration

• Science & Engineering Demonstrator Training

Centre for Innovation in Learning and Teaching (CILT), Flinders University, SA, Australia (July 2016)

• University Demonstrator and Teaching

Centre for Advancement of Learning & Teaching (CALT), Monash University, VIC, Australia (May 2009)

• Demonstrator Teaching Development Program | Monash University (23-24 February 2010)

## • Spoken Language & Communication Skills Development for Academic Staff | Monash University (11 Aug 2009–13 Oct 2009)

Materials Processing and Characterization techniques

• Australian Synchrotron Powder Diffraction Data Analysis Workshop (tutorial and practical)

ANSTO - Australian Synchrotron, 20 hours (January 2010)

• Basic and Practical Principles of Ionising Radiation Safety

Monash University, 40 hours (31 Aug 2009-04 Sep 2009)

• Scanning and Transmission Electron Microscopy (FIB, SEM, TEM) | Monash Centre for Electron

Microscopy (MCEM), and Flinders University (June 2011 – July 2011, Dec 2015, Nov 2016, Oct 2017, Sep 2018)

• XRD, XRF, DTA/TGA, Malvern Zeta sizer, Raman, UV-vis, and XPS spectroscopy techniques Monash University, Flinders University, Adelaide University

#### Lab and Safety Management

• MCN waste management and dangerous goods training | Melbourne Centre for Nanofabrication (MCN) (5 Nov 2012)

- Safety induction at CSEM and CAPS | Flinders University, 2015 and 2016
- General HSW Induction | The University of Adelaide 2018 (23 Sep 2018)
- High-Risk HSW Induction | The University of Adelaide 2018 (23 Sep 2018)

## Core competencies

Computer software programs and operating systems

- Quantitative Texture Analysis Software (Mtex) for Crystallographic geometry Gromacs
- EBSD data analysis MAUD (Materials Analysis Using Diffraction) MATLAB/Simulink SolidWorks
- Image analyzer EndNote Mendeley KaleidaGraph 4 Origin (data analysis software)
- Advanced Excel for Accounting
   Microsoft Office suite 
   Machine Learning with Python

### Teaching & Lab demonstration Experiences

#### Flinders University (South Australia, Australia)

- Solid Mechanics (ENGR3751\_9811, 2016 & 2017 S1)
- Materials Engineering and Advanced Materials, CHEM ENG 3029
- Engineering Physics & Materials (ENGR1722, 2016 S1)
- Engineering Mathematics plus GE version (ENGR2711\_8761, 2016 S1)

#### Azad University (Saveh, Iran)

- Physical Metallurgy principles (1,2) Mechanics Structure
- Principles of Materials science and Engineering Casting of Metals
- Heat treatment of Materials(Topic Coordinator) Electromagnetic and Magnetic Materials
- Welding Metallurgy 
   Orrosion of Materials
   Materials Characterization Methods and Application

#### School of Metallurgy and Materials, College of Engineering, University of Tehran, Tehran, Iran (ongoing) Only for PhD student – Alborz Campus

- Analysis methods of biomaterials (biomaterials interaction with cells and proteins and biosensors) (only for PhD students) Semester 1, 2022 - 2024 (now)
- Electronic Properties of Materials (Only for PhD students) Semester 1, 2022 2024
- Spectroscopy (Only for PhD students) Semester 2, 2022-2024 (now)

#### **Achievements**

- High success rates in teaching proper time management and study skills to students;
- Efficient structuring of weekly sessions according to the syllabus of the core class;
- Identifying and resolving the issues with which students were experiencing difficulties
- Successful transfer of collaborative learning techniques to students

## Professional Memberships

- The Medical Device Research Institute (MDRI) at Flinders University
- Member of Australian nanotechnology network (ANN)
- Centre for NanoScale Science and Technology CNST at Flinders University
- Professional Engineer in Australia: Standing as a Professional Engineer (Skill Level 1) in Australia, classified
- in Materials Engineer occupation (ANZSCO 233112) with ID #4674301

