

SARA MAHSHID, PhD

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Department of Bioengineering
McGill University
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Appointments

Assistant Professor	McGill University, Canada	(since 08/2017)
Post-doctoral Fellow	University of Toronto, Canada	(11/2015-07/2017)
Post-doctoral Fellow	McGill University, Canada	(10/2012-10/2015)
Lecturer	Monash University- Sunway, Malaysia	(2011-2012)
Visiting Research Assistant	Hunan University, Changsha, China	(2010)
Research and Teaching Assistant	Sharif University of Technology, Tehran, Iran	(2003-2010)
Materials Engineer (consultant)	Pars Oil Refinery, Tehran, Iran	(2005-2008)

Education

PhD Materials Science and Engineering	Sharif University of Technology, Tehran, Iran <i>Thesis: Synthesis of modified TiO₂ nanotubes based on anodized Ti for electrochemical sensors</i>	(06/2011)
MSc Materials Science and Engineering	Sharif University of Technology, Tehran, Iran <i>Thesis: Synthesis and characterization of nanocrystalline TiO₂</i> Ranked first in the graduating class	(12/2005)
BSc Materials Engineering	Iran University of Science and Technology, Tehran, Iran <i>Thesis: Study the mechanical properties of fast firing porcelain</i>	(06/2003)

Innovation/Patent

- **Sara Mahshid**, Mohammed Jalal Ahamed, Rob Sladek, and Walter Reisner, "Methods and Systems Relating to Dielectrophoretic Manipulation of Molecules", **US provisional patent 62336855**.

Journal Publications

1. **Sara Mahshid**, Adam H. Mephram, Sahar Sadat Mahshid, Ian B. Burgess, Tina S. Safaei, Edward H. Sargent, Shana O. Kelley "Mechanistic Control of the Growth of Three-Dimensional Gold Sensors", **The Journal of Physical Chemistry C**, 120 (37), 2016, 21123–21132.
2. M. J. Ahamed, **Sara Mahshid**, Danial Berard, Rob Sladek, Walter Reisner, and Sabrina Leslie "Continuous Confinement Fluidics: Getting Lots of Molecules into Small Spaces", **Macromolecules**, 49 (7), 2016, 2853–2859.
3. **Sara Mahshid**, Mohammed Jalal Ahamed, Daniel Berard, Susan Amin, Rob Sladek, Sabrina Leslie, Walter Reisner, "Development of a platform for Single Cell genomics using convex lens-induced confinement", **Lab-on-a-chip**, 15, 2015, 3013-3020.
4. D. Gupta, J. Miller, A. Muralidhar, **Sara Mahshid**, Walter Reisner, K. Dorfman "Experimental evidence of weak excluded volume effects for nanochannel confined DNA", **ACS Macro Letters**, 4, 2015, 759–763.
5. D. Berard, F. Michaud, **Sara Mahshid**, M. J. Ahamed, M.J. McFaul, P. Burebe, R. Sladek, W. Reisner, S. R. Leslie, "Convex Lens-Induced Nanoscale Templating", **PNAS (Proceedings of National Academy of Science)**, 111, 2014, 13295-13300. [Impact factor 9.674]

6. D. Gupta, J. Sheats, A. Muralidhar, J. Miller, D. Huang, **Sara Mahshid**, K. Dorfman, and W. Reisner, "Mixed confinement regimes during equilibrium confinement spectroscopy of DNA", *The Journal of Chemical Physics*, 140, 214901, 2014. [Impact Factor 3.14]
7. **Sara Mahshid**, Ch. Li, S. S. Mahshid, M. Askari, A. Dolati, L. Yang, Sh. Luo and Q. Cai "Sensitive determination of dopamine in the presence of uric acid and ascorbic acid using TiO₂ nanotubes modified with Pd, Pt and Au nanoparticles", *Analyst*, 136, 2011, 2322-2329. [Impact Factor 4.107]
8. **Sara Mahshid**, Sh. Luo, L. Yang, S. S. Mahshid, M. Askari, A. Dolati and Q. Cai, "Carbon-Pt Nanoparticles Modified TiO₂ Nanotubes for Simultaneous Detection of Dopamine and Uric Acid", *Journal of Nanoscience and Nanotechnology*, 11, 2011, 6668-6675. [Impact Factor 1.339]
9. **Sara Mahshid**, A. Dolati, M. Goodarzi, M. Askari, and A. Ghahramaninezhad, "Self-Organized Titanium Oxide Nanotubes Prepared in Phosphate Electrolytes: Effect of Voltage and Fluorine Concentration", *ECS Transactions*, 28 [7] 2010, 67-74.
10. **Sara Mahshid**, M. Askari, M. and Sasani Ghamsari, N. Afshar and S. Lahuti, "Mixed -phase TiO₂ nanoparticles preparation using sol-gel method", *Journal of Alloys and Compounds*, 478, 2009, 586- 589. [Impact Factor 2.999]
11. **Sara Mahshid**, S.S. Mahshid, M. Askari, A. Dolati, L. Yang, Sh. Luo, and Q. Cai, "Enhanced electrocatalytic activity of TiO₂ nanotubes modified with Pt and Pd nanoparticles: Electro-oxidation of dopamine, uric acid and ascorbic acid", *International Journal of Theoretical and Applied Nanotechnology*, Volume 1, 2012, 73-78.
12. **Sara Mahshid**, S. S. Mahshid, A. Ghahremaninezhad, M. Askari, A. Dolati, L. Yang, Sh. Luo and Q. Cai, "Catalytic activity of TiO₂ nanotubes modified with carbon and Pt nanoparticles for detection of dopamine", *ECS Transactions*, 35 [35] 2011, 53-62.
13. **Sara Mahshid**, M. Askari, M. and Sasani Ghamsari, "Effect of Brookite presence on nanocrystalline anatase-rutile phase transformation", *International Journal of Nanotechnology*, 6 [10-11] 2009, 961-972. [Impact Factor 1.144]
14. **Sara Mahshid**, M. Askari, M. Sasani Ghamsari, "Synthesis of TiO₂ nanoparticles by hydrolysis and peptization of Titanium isopropoxide solution", *Journal of Materials Processing Technology*, 189, 2007 296-300. [Impact factor 2.236]
15. S.S. Mahshid, **Sara Mahshid**, A. Dolati, M. Ghorbani, Sh. Luo, L. Yang, and Q. Cai, "Template-based electrodeposition of Pt/Ni nanowires and its catalytic activity toward glucose", *Electrochimica Acta*, 58, 2011, 551- 555. [Impact Factor 4.507]
16. S.S. Mahshid, **Sara Mahshid**, A. Dolati, M. Ghorbani, L. Yang, Sh. Luo, and Q. Cai, "Electrodeposition and electrocatalytic properties of Pt/Ni-Co nanowires for non-enzymatic glucose detection", *Journal of Alloys and Compounds*, 554, 2013, 169-176. [Impact factor 2.999]
17. M Sasani Ghamsari, S Radiman, M. Azmi Abdul Hamid, **Sara Mahshid**, Sh Rahmani "Room temperature synthesis of highly crystalline TiO₂ nanoparticles", *Materials Letters*, Volume 92, 2013, 287-290 [Impact Factor 2.269]
18. S.S. Mahshid, **Sara Mahshid**, A. Dolati, M. Ghorbani, L. Yang, Sh. Luo, and Q. Cai, "Preparation of Pulse Deposited Pt/Ni Nanowires Electrode for Glucose Detection in Alkaline Solution", *International Journal of Theoretical and Applied Nanotechnology*, Volume 1, 2012, 66-72.
19. N. Bagheri, S. K. Sadrnezhaad, S. Mahshid, "Effect of Si Antioxidant on the Rate of Oxidation of Carbon in MgO-C Refractory", *International Journal of Engineering, Transactions B: Applications*, 24, 2011, 357-366.
20. S. S. Mahshid, S. Mahshid, A. Ghahremaninezhad, A. Dolati, M. Ghorbani, Sh. Luo, L. Yang and Q. Cai "The Pt/Ni modified TiO₂ nanotubes and its catalytic activity toward glucose", *ECS Transactions*, 35 [35] 2011, 63-69.
21. S. S. Mahshid, Sh. Luo, L. Yang, **Sara Mahshid**, A. Dolati, M. Ghorbani and Q. Cai, "A well-dispersed Pt/Ni/TiO₂ nanotubes modified electrode as an amperometric non-enzymatic glucose biosensor", *Sensor letters*, 9 (2011) 1598-1605. [Impact factor 0.819]

22. S. K. Sadrnezhaad, Z. A. Nemati, **Sara Mahshid**, S. Hosseini, and B. Hashemi, "Effect of Al antioxidant on kinetics of oxidation in MgO-C refractory", *Journal of American Ceramic Society*, 90 [2] 2007, 509-515. [Impact factor 2.61]
23. S. K. Sadrnezhaad, **Sara Mahshid**, B. Hashemi and Z. A. Nemati, "Oxidation Mechanism of C in MgO-C refractory Bricks", *Journal of American Ceramic Society*, 89 [4] 2006, 1308-1316. [Impact factor 2.61]

Invited Talks

1. **S. Mahshid**, "Nanostructured Based Lab-on-chips for optical and electrical detection", Bioengineering and Biomedical engineering research seminar, **McGill University**, QC, Canada, Oct. 23 (2015)
2. **S. Mahshid**, "Silicon nitride and Indium Tin Oxide Nanostructures for dielectrophoretic manipulation of biomolecules, Departmental Seminar, Mechanical Engineering, **University of Ottawa**, ON, Canada, Nov. 27 (2015)
3. **S. Mahshid**, "Silicon nitride and Indium Tin Oxide Nanostructures for dielectrophoretic manipulation of biomolecules, Departmental Seminar, Mechanical and Aerospace Engineering, **Carlton University**, ON, Canada, Jan. 29 (2016)
4. **S. Mahshid**, "Nanostructured Based Lab-on-chips for optical and electrical detection, Department of Materials Engineering, **Auburn University**, AL, USA, Feb. 25 (2016)
5. **S. Mahshid**, "Nanostructured Based Lab-on-chips for optical and electrical detection, Centre for Bioengineering & Biotechnology (CBB), **University of Waterloo**, ON, Canada, April 15 (2016)
6. **S. Mahshid**, "Nanostructured Based Lab-on-chips for optical and electrical detection, Department of Biomedical Engineering, **University of Bridgeport**, CT, USA, May 2 (2016)
7. **S. Mahshid**, "Nanostructured Based Lab-on-chips for optical and electrical detection", Department of Electrical and Computer Engineering, **McMaster University**, ON, Canada, Nov. 3 (2016)
8. **S. Mahshid**, "Nanostructured Based Lab-on-chips for optical and electrical detection", Department of Electrical and Computer Engineering, **University of California, Davis**, CA, USA, Feb. 28 (2017)
9. **S. Mahshid**, "Nanostructured Based Lab-on-chips for optical and electrical detection", Department of Electrical and Computer Engineering, **York University**, ON, Canada, March 9 (2017)

Selected Conference Publications

1. **S. Mahshid**, Shana O. Kelley, "Nanostructured Based Labon-Chips for Detection of Single Biomolecules", 100th CSC (Canadian Society of Chemistry), 2017, May 28- Jun 1, Toronto, Canada.
2. **S. Mahshid**, Shana O. Kelley, "Nanostructured Based Labon-Chips for Detection of Single Biomolecules", 99th CSC (Canadian Society of Chemistry), 2016, 5-9 Jun, Halifax, Canada.
3. **S. Mahshid**, M. J. Ahamed, Rob Sladek, Walter Reisner, "Silicon nitride and Indium Tin Oxide Nanostructures for dielectrophoretic manipulation and sensing of biomolecules", ICANM 2015, 10-12 Aug, Ottawa, Canada.
4. **S. Mahshid**, D. Berard, M. J. Ahamed, Rob Sladek, Sabrina Leslie, Walter Reisner, "Design and fabrication of fused silica based nano-platform for DNA templating", CANSMART/SMN 2015, 15-17 July, Vancouver, Canada, proceedings 121-126.
5. **S. Mahshid**, D. Berard, R. Sladek, S. Leslie, W. Reisner, "Nanofluidic laboratory-on-chip device for mapping of single molecule DNA extracted from single cells", APS march meeting, Denver, Colorado, USA, 2-7 March 2014
6. R.T. De Silva, P. Pasbakhsh, G.K. Lim, C. S. Piao, **S. Mahshid**, "Polylactic acid/halloysite nanocomposites films by solvent casting method", The 19th International Conference on Composite Materials, Montreal, Quebec, Canada, 28 July-2 August 2013
7. **S. Mahshid**, S. S. Mahshid, M. Askari, A. Dolati, L. Yang, Sh. Luo and Q. Cai "Study the Electrocatalytic Behaviour of Pt-Pd Modified TiO₂ Nanotubes towards Oxidation of Dopamine", proceedings of the 3rd

International Conference on Nanotechnology: Fundamentals and Applications Montreal, Quebec, Canada, 7-9 August 2012.

8. S. S. Mahshid, **S. Mahshid**, Sh. Luo, L. Yang, A. Dolati, M. Ghorbani, and Q. Cai "Catalytic Activity of Pt/Ni Nanowires: Study the Glucose Oxidation in Alkaline Solution", proceedings of the 3rd International Conference on Nanotechnology: Fundamentals and Applications Montreal, Quebec, Canada, 7-9 August 2012.
9. **S. Mahshid**, S. S. Mahshid, M. Askari, A. Dolati, L. Yang, Sh. Luo and Q. Cai "Sensor application of Carbon-Pt modified TiO₂ nanotubes for detection of dopamine", 219th ECS Meeting, May 1-6, 2011, Montreal, QC, Canada.
10. S. S. Mahshid, **S. Mahshid**, Sh. Luo, L. Yang, A. Dolati, M. Ghorbani, and Q. Cai "An amperometric non-enzymatic glucose biosensor based on Pt/Ni/ TiO₂ nanotubes electrode", 219th ECS Meeting, May 1-6, 2011, Montreal, QC, Canada.
11. M. Goodarzi, A. Afshar, A. Dolati, **S. Mahshid**, "The effect of applied potential on electrophoretic deposition of hydroxyapatite on TiO₂ nanotubes", International Congress on Nanoscience and Nanotechnology (ICNN2010), 9-11 November 2010, Shiraz, Iran.
12. **S. Mahshid**, A. Dolati, M. Goodarzi, M. Askari, and A. Ghahramaninezhad, "Self-Organized Titanium Oxide Nanotubes Prepared in Phosphate Electrolytes: Effect of Voltage and Fluorine Concentration", 217th ECS Meeting, April 25-30, 2010, Vancouver, Canada.
13. **S. Mahshid**, M. Goodarzi, A. Dolati, M. Askari, "A brief study on the tubular structure of anodic TiO₂ prepared in phosphate-base and sulphate-base electrolytes", 3rd Conference on Nanostructures (NS2010), March 10-12, 2010, Kish Island, Iran.
14. **S. Mahshid**, M. Goodarzi, A. Dolati, M. Askari "TiO₂ NANOTUBES ARRAYS FABRICATED BY ANODIZING IN PHOSPHATE-BASED SOLUTION", 1st International Conference from Nanoparticles & Nanomaterials to Nanodevices & Nanosystems (IC4N 2009), June 2009, Halkidiki, Greece.
15. A. Dolati, L. Jaberansari, S.S. Mahshid, A. Ghahremaninezhad, **S. Mahshid**, M. Ghorbani, "Electrodeposition of the Co-Ni Nanowire in Polycarbonate Template", 1st International Conference from Nanoparticles & Nanomaterials to Nanodevices & Nanosystems (IC4N 2009), June 2009, Halkidiki, Greece.
16. S.S. Mahshid, A. Dolati, R. Mortazavi, M. Askari, **S. Mahshid**, "The corrosion behavior in reinforced concrete at Persian Gulf", 11th national corrosion congress, 12-14 May 2009, Kerman, Iran.
17. **S. Mahshid**, A. Dolati, A. Karimi, M. Askari, "Electrochemical behavior of TiO₂ nanotubes fabricated by anodizing", Nanotech insight conference, 29Mar- 2Apr 2009, Barcelona, Spain.
18. **S. Mahshid**, A. Dolati, S. Mahshid, S. Hashemi Daryan, "An investigation on template-based electrodeposition of cobalt-nickel nanowires", Nanotech insight conference, 29Mar- 2Apr 2009, Barcelona, Spain.
19. **S. Mahshid**, M. Askari, M. Sasani Ghamsari, "Nucleation and growth process during heat treatment of TiO₂ nanoparticles prepared from different pH solution, 2nd International congress on Nanoscience and Nanotechnology (ICNN2008), Oct. 2008, University of Tabriz, Tabriz, Iran.
20. **S. Mahshid**, A. Dolati, M. Askari, A. Karimi, "Anodizing of TiO₂ nanotubes in fluoride solution", Northern Area Eastern Conference on Minimizing Infrastructure Corrosion and International Symposium on Fundamental Corrosion Research In Progress, October 2008, Westin Harbour Castle, 1 Harbour Square, Toronto, Ontario, Canada.
21. A. Dolati, M. Askari, R. Mortazavi, S.S. Mahshid, **S. Mahshid**, "A STUDY ON CORROSION BEHAVIOR IN REINFORCED CONCRETE AT PERSIAN GULF", Northern Area Eastern Conference on Minimizing Infrastructure Corrosion and International Symposium on Fundamental Corrosion Research In Progress, October 2008, Westin Harbour Castle, 1 Harbour Square, Toronto, Ontario, Canada.
22. S. Kafaeekhoo, **S. Mahshid**, S. Aghahosseini, H. Hassani, S.S. Mahshid, "Energy saving and emission reduction of furfural extraction unit in Pars Oil Refinery by introducing a new selected procedure in separation of pseudo-rafinate from aromatic phases", 18th International Congress of Chemical and Process Engineering (CHISA2008), August 2008, Prague, Czech Republic.

23. **S. Mahshid**, M. Askari, M. Sasani Ghamsari, "Nanocrystalline TiO₂: parameters and effectiveness", 18th International Congress of Chemical and Process Engineering (CHISA2008), August 2008, Prague, Czech Republic.
24. N. Bagheri, S. K. Sadrnezhad and **S. Mahshid**, "Effect of Si Antioxidant on the Oxidation behavior of MgO-C Refractories", New Materials National Congress, June 2008, Material and Energy Research Center (MERC), Karaj, Iran.
25. **S. Mahshid**, M. Askari, M. Sasani Ghamsari, "Effect of Brookite presence on nanocrystalline anatase-rutile phase transformation", 2nd Conference on Nanostructures (NS2008), March 11-14, 2008, Kish University, Kish Island, Iran.
26. S.S. Mahshid, A. Dolati, L. Jaberansari, A. Ghahremaninezhad, **S. Mahshid**, M. ghorbani "A Study on Mechanism of the Co-Ni Alloy Nanowires Electrodeposited on the PCT Templates", 2nd Conference on Nanostructures (NS2008), March 11-14, 2008, Kish University, Kish Island, Iran.
27. **S. Mahshid**, M. Askari, M. Sasani Ghamsari, "Anatase-rutile phase transformation in TiO₂ nanoparticles prepared from different pH solutions" 11th annual congress of metallurgical engineering society, Oct 2007, Isfahan Steel Mill, Isfahan, Iran.
28. **S. Mahshid**, M. Askari, M. Sasani Ghamsari, "Effect of peptization on the synthesis of TiO₂ nanoparticles by hydrolysis of TTIP", 6th conference of Iranian ceramic association, May 2007, Research Center of Material & Energy, Tehran, Iran.
29. **S. Mahshid**, M. Askari, M. Sasani Ghamsari, "Effect of reactants concentration ratio on the synthesis of TiO₂ nanoparticles by hydrolysis of TTIP", 1st International congress on Nanoscience and Nanotechnology (ICNN2006), December 2006, University of Tehran, Tehran, Iran.
30. **S. Mahshid**, M. Askari, M. Sasani Ghamsari, "Synthesis of TiO₂ nanoparticles by hydrolysis and peptization of Titanium isopropoxide solution, 1st Nanostructure Workshop, March 2006, Kish university, Kish Island, Iran
31. **S. Mahshid**, M. Askari, M. Sasani Ghamsari, "Effect of pH on TiO₂ nano-particles size prepared via the hydrolysis method", 9th annual congress of metallurgical engineering society, November 2005, Shiraz University, Shiraz, Iran.
32. **S. Mahshid**, B. Hashemi, S. K. Sadrnezhad and Z. A. Nemati, "Effect of MgO particle size distribution on oxidation kinetic of MgO-C refractory bricks at different temperatures", 5th conference of Iranian ceramic association, December 2004, Iran University of Science and Technology, Tehran, Iran.
33. **S. Mahshid**, M. Askari, M. Sasani Ghamsari, "Synthesis of TiO₂ nanoparticles in order to use in drug delivery", 1st Seminar in usage of nanotechnology in medical science, December 2004, University of Tehran, Tehran, Iran.

Professional Affiliations

- Institute of Electrical and Electronics Engineers (IEEE)
- Canadian Chemical Society (CCS)
- American Physical Society (APS)
- The Electrochemical Society (ECS)
- Royal Society of Chemistry (RSC)
- Iran Nanotechnology Initiative Council
- Iran's National elite foundation Member of APS, RSC