

SAJJAD HABIBZADEH, PhD

Current: School of Chemical Engineering, Tehran Polytechnic, Tehran, Iran

<http://goo.gl/7afCfZ>

Previous:

- Post-Doctoral Fellow at:
 - NSERC industrial chair in coating and surface engineering (CSE)
 - NSERC/TOTAL industrial chair in multiphase reaction at extreme conditions
 - Electrochemical engineering Lab, department of chemical engineering, McGill University.

Contact: School of Chemical Engineering,

Tehran Polytechnic, Tehran, Iran

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Research area: Electrochemical Process Engineering, Reaction Engineering Surface coating (wet/dry techniques), Electro/Catalysis and Advanced Materials; Powder Technology.

Educations

Doctor of Philosophy (2009-2013)

Electrochemical engineering Lab, department of chemical engineering, **McGill University, Montreal, Canada.**

Thesis title: Employment of Ir/Ti-oxide coatings and electrochemical polishing of a 316L stainless steel for the enhancement of biocompatibility of metal surfaces.

Master of Science: 2006-2009

University of Tehran, School of Chemical Engineering, **catalysis and nanostructured materials Lab, Tehran, Iran.**

First honor in minor

Thesis title: Combustion synthesis of doped metal oxide nanoparticles as nanocatalyst for gas sensing and nanofluids.

Project Highlights, 2005-2018

Electrochemical engineering:

- Coating development of non-precious metal oxides towards *chlorine production*
- *Chlor-Alkali Uhde electrolysis cell simulation* by COMSOL software
- *Corrosion prevention & control management in acidic and alkaline atmosphere*
- Electro-catalytic activity of *IrO₂-based electrocatalysts* to the reduction of hydrogen peroxide.
- Synthesis and characterization of 3D Ir/Ti-oxide nanoparticle/carbon nanotube *cathodes for hydrogen evolution in alkaline electrolyte*.
- Micro-leveling of *316L stainless steel and Nitinol* by a developed electrochemical polishing method.
- Development of *green corrosion inhibitors* to improve the corrosion protection of pipe flow lines in oil and gas industry.
- Synthesis of nano-structured electrodes as *supercapacitors and cathodes in rechargeable batteries*.

Reactor design and catalysis:

- Design of *fluidized bed reactors* at high temperature with chemical reaction deposition
- Parametric study of *Oxychlorination production* in a large scale fluidized bed reactor for *EDC production*
- Catalytic activity of oxygen storage metal-oxides in the three-way catalyst (TWC) for oxidation of CO and hydrocarbons.
- Photocatalytic activity of nanostructure 1D TiO₂ synthesized by novel techniques (i.e., solution combustion synthesis, polyacrylamide gel, etc)

- Synthesis and characterization of various metal oxides such as, SnO₂, SiO₂, TiO₂, IrO₂ and HfO₂, etc (applied in nanofluids and coatings).

Micro- and nano-powder technology:

- Multilayer coatings of fine particles by *chemical vapor deposition* / atomic layer deposition (CVD/ALD) fluidized bed reactor.
- Novel synthesis of Li₄Ti₅O₁₂ (LTO) as the anode material of Li-ion batteries by fluidized bed chemical vapor deposition (FBR-CVD).
- Chemical vapor deposition (CVD) of high refractive index (TiO₂) and low refractive index (SiO₂) metal oxides at low and atmospheric pressure.
- Design of a semi-pilot CVD fluidized bed reactor using for *fine powders* with irregular morphology (ordered by Viavi Solutions Inc.)
- Prolysis of polymer in a newly-designed reactor

Publications

• Journal articles:

- A Baghban, J Sasanipour, **S Habibzadeh**, Z Zhang, Sulfur dioxide solubility prediction in ionic liquids by a group contribution—LSSVM model, *Chemical Engineering Research and Design* 142 (2019) 44-52.
- A Rostami, A Baghban, AH Mohammadi, A Hemmati-Sarapardeh, **S. Habibzadeh**, Rigorous prognostication of permeability of heterogeneous carbonate oil reservoirs: Smart modeling and correlation development, *Fuel* 236 (2019) 110-123
- MN Kardani, A Baghban, J Sasanipour, AH Mohammadi, **S Habibzadeh**, Group contribution methods for estimating CO₂ absorption capacities of imidazolium and ammonium-based polyionic liquids, *Journal of Cleaner Production* 203 (2018) 601-618
- AD Saei, A Baghban, F Zarei, Z Zhang, **S Habibzadeh**, ANFIS based evolutionary concept for estimating nucleate pool boiling heat transfer of refrigerant-ester oil containing nanoparticles *International Journal of Refrigeration* 96 (2018) 38-49.
- A. Baghban, J. Sasanipour, **S. Habibzadeh**, Z. Zhang, Estimating solubility of supercritical H₂S in ionic liquids through a hybrid LSSVM chemical structure model, *Chinese Journal of Chemical Engineering*, 2018, In press.
- **S. Habibzadeh**, O Zabeida, A Argoitia, R Sargent, J Klemberg-Sapieha, J Chaouki, Ludvik Martinu, Conformal Multilayer Photocatalytic Thin Films on Fine Particles by Atmospheric Pressure Fluidized Bed Chemical Vapor Deposition, *Industrial & Engineering Chemistry Research*, 57 (2018) 10345.
- H. Hosseini Nazhad Ghazani, A. Baghban, A. Mohammadi, **S. Habibzadeh**, Absorption of CO₂-rich gaseous mixtures in ionic liquids: A computational study, *The Journal of Supercritical Fluids*, 133 (2018) 455-465
- A. Baghban, S. Zilabi, S. Golrokhifar, **S. Habibzadeh**, Neural computations in modelling of CO₂ capture from Gas stream emissions by Sodium Glycinate solution, *Petroleum Science and Technology*, 36 (2018) 326
- A. Baghban, **S. Habibzadeh**, F. Zokaee Ashtiani, Toward a modeling study of thermal conductivity of nanofluids using LSSVM strategy, *Journal of Thermal Analysis and Calorimetry*, (2018), In press
- A. Baghban, A. Jalali, A. Mohammadi, **S. Habibzadeh**, Efficient modeling of drug solubility in supercritical carbon dioxide, *The Journal of Supercritical Fluids*, 133 (2018) 466.
- A. Baghban, M. N. Kardani, **S. Habibzadeh**, Prediction viscosity of ionic liquids using a hybrid LSSVM and group contribution method, *Journal of Molecular Liquids*, 236 (2017) 452-464.
- M. Shahrezaei, A. A. Babaluo, **S. Habibzadeh**, M. Haghighi, Photocatalytic Properties of 1D TiO₂ Nanostructures Prepared from Polyacrylamide Gel-TiO₂ Nanopowders by Hydrothermal Synthesis, *European Journal of Inorganic Chemistry*, 3 (2017) 694-703.
- M. Shahrezaei, **S. Habibzadeh**, A. A. Babaluo, H. Hosseinkhani, M. Haghighi, A. Hasanzadeh, R. Tahmasebpour, Study of synthesis parameters and photocatalytic activity of TiO₂ nanostructures, *Journal of Experimental Nanoscience*, 12 (1), 2017.

- M. Attia, Sh. Farag, **S. Habibzadeh**, S. Hamzehlouia, J. Chaouki, Fast Pyrolysis of Lignocellulosic Biomass for the Production of Energy and Chemicals: A Critical Review, *Current Organic Chemistry*, 20 (28), 2016.
- **S. Habibzadeh**, O. Zabeida, L. Martinu, J. Chaouki and J.E. Sapheia, "Room temperature acoustic fluidized bed chemical vapor deposition of SiO₂ on TiO₂ nanoparticles: Towards enhancement of UV shielding properties", submitted to *Advanced Functional Materials*, 2015.
- **S. Habibzadeh**, L. Li, S. Omanovic, D. Shum-Tim and E.C. Davis, "Electrochemical Polishing as a 316L Stainless Steel Surface Treatment Method: Towards the Improvement of corrosion stability", *Corrosion Science*, 87 (2014) 89-100.
- **S. Habibzadeh**, L. Li, S. Omanovic, D. Shum-Tim and E.C. Davis, "Biocompatibility of Ir/Ti-oxide coatings: Interaction with platelets, endothelial and smooth muscle cells", *Applied Surface Science*, 301(2014) 530–538.
- **S. Habibzadeh**, D. Shum-Tim and S. Omanovic, "Surface and Electrochemical Characterization of Ir/Ti-Oxide Coatings: Towards the Improvement of Radiopacity for Coronary Stent Application", *International Journal of Electrochemical Science*, 8 (2013) 6291 – 6310.
- **S. Habibzadeh**, A. Kazemi, A. A. Khodadadi, Y. Mortazavi, S. Omanovic, M. Shariaty-nyasar, "Thermal conductivity and stability of nanofluids of tin dioxide synthesized via microwave-induced combustion route", *Chemical Engineering journal*, 156 (2010) 471-478.
- **S. Habibzadeh**, A. A. Khodadadi, Y. Mortazavi, "Sm₂O₃-doped SnO₂ nanoparticles via microwave-induced combustion synthesis for selective sensing of CO", *Sensors and Actuator B: Chemical*, 144 (2010) 131–138.
- **S. Habibzadeh**, A. A. Khodadadi, Y. Mortazavi, "Novel microwave-induced combustion synthesis of SnO₂ nanoparticles for selective sensing of CO using tin chloride", *Journal of Nanoscience and Nanotechnology*, 10 (2010) 6003-6008.
- A. Mohaddespour, H. Abolghasemi, M. Torab Mostaeidi, **S. Habibzadeh**, "A new model for estimation of the thermal conductivity of polymer/clay nanocomposites", *Journal of Applied Polymer Science*, 118, 1042–1050 (2010).

Awards

- RGC (Research grant council)'s external reviewer, Hong Kong, China, 2010-present.
- McGill Engineering Great Award, McGill University, 2013.
- Graduate Excellence Fellowships (GEF), McGill University, 2012.
- Graduate Excellence Fellowships (GEF), McGill University, 2011.
- Lars and Alberta fellowship, McGill University, 2010.
- Iranian Nanotechnology Initiative Organization Award, 2010.
- McGill Engineering Doctoral Award (MEDA), McGill University, 2009.
- Iranian Nanotechnology Initiative Organization Award, 2009.
- Iranian Nanotechnology Initiative Organization Award, 2007.
- Iranian Elite National Foundation Award, 2008.
- Iranian Association of Chemical Engineering Award, 2006.
- Semnan University, Chemical Engineering Department First-Honor Award, 2006.