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Engineering & Scientific Consulting

Navid Zanganeh, Ph.D.

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Professional Profile

Dr. Zanganeh is a chemical engineer and specializes in catalysis, reaction kinetics, low temperature combustion strategies, diesel engine emissions control, nanomaterials synthesis and characterization techniques, soft materials science, and analytical methods in downstream and upstream oil and gas applications. He has assisted with the investigation of industrial fires and explosions as well as various mechanical equipment and system failures.

Prior to joining Exponent, Dr. Zanganeh was a scientist and materials characterization lab manager at an oil and gas services company providing analytical testing and analysis. He collaborated in various projects for upstream studies for investigating the fluid behaviors under high temperature and high pressure (HTHP) conditions via PVT analysis. His materials science experience includes thermal and rheological behavior of petroleum products including crude oil, lubricating oils, drilling fluids, pastes, and polymers via state-of-the-art rheometer, thermogravimetric analysis (TGA), and differential scanning calorimetry (DSC). Dr. Zanganeh was also a key member of the chromatography department. He has expertise in utilizing liquid and gas chromatography techniques to simulate distillation of crude oil, sulfur analysis, PIONA analysis, identification of aromatics, compositional analysis of crude oil, natural gas, refinery wastes, fuels, and oils.

During his graduate program, he worked on strategies to reduce the pollutant emissions produced by diesel engines. He had a close collaboration with a research team in the Center for Advanced Vehicular Systems at Mississippi State University where he studied the effect of diesel-natural gas dual fuel low temperature (LTC) strategy on engine performance and exhaust emissions. He also worked on the synthesis and characterization of a novel sinter resistant copper-gold alloy catalyst for CO oxidation. Additionally, he has an extensive experience with nanomaterial synthesis techniques including sol-gel, deposition-precipitation (DP), microemulsion, electro-deposition, and chemical vapor deposition (CVD). He is also experienced in material characterization techniques including scanning electron microscopy (SEM), transmitted electron microscopy (TEM), x-ray photoelectron spectroscopy (XPS), x-ray diffraction (XRD), energy dispersive spectroscopy (EDS), and BET surface area analysis. Dr. Zanganeh also possesses a research background in the separation and purification of disaccharides by using the solvent extraction technique. He investigated the solubility of lactose in a sugar-water-alcohol system via NRTL and UNIFAC thermodynamic models. He also utilized statistical tools for the design of experiments (DOE), finding the effective parameters, and optimization of the separation process.

Academic Credentials & Professional Honors

Ph.D., Engineering, Mississippi State University, 2017

M.Sc., Chemical Engineering, Amirkabir University of Technology, Iran, 2011

B.Sc., Chemical Engineering, Razi University, Iran, 2008

Bagley Engineering Graduate Fellowship, Mississippi State University 2013-2015

Licenses and Certifications

Certified Fire and Explosion Investigator (CFEI)

Prior Experience

Scientist and Materials Characterization Lab Manager, Texas OilTech Laboratories, 2018-2020

Professional Affiliations

AIChE

NFPA

Languages

Persian

Publications

Zanganeh, N., Guda, V. K., Toghiani, H., Keith, J. M. (2018). Sinter-resistant and highly active sub-5 nm bimetallic Au-Cu nanoparticle catalyst encapsulated in silica for high-temperature carbon monoxide oxidation. Journal of ACS Materials and Interfaces, 10 (5), 4776-4785.

Zanganeh, N., Rajabi, A., Torabi, M., Allahkarami, M., Moghaddas, A., and Sadrnezhaad, S.K. (2014). Growth and microstructural investigation of multiwall carbon nanotubes fabricated using electrodeposited nickel nanodeposits and chemical vapor deposition method. Journal of Molecular Structure, 1074, 250-254.

Zanganeh, N., Zanganeh, S., Rajabi, A., Allahkarami, M., Ghahnavyeh, R. R.,Moghaddas, A, Sadrnezhaad, S.K., (2014). Flowerlike boehmite nanostructure formation in two-steps. Journal of Coordination Chemistry, 67(3), 555-562.

Zanganeh, S., Kajbafvala, A., Zanganeh, N., Molaei, R., Bayati, M.R., Zargar, H.R., and Sadrnezhaad. S.K. (2011). Hydrothermal synthesis and characterization of TiO 2 nanostructures using LiOH as a solvent. Advanced Powder Technology, 22(3), 336-339

Zanganeh, S., Kajbafvala, A., Zanganeh, N., Mohajerani, M.S., Lak, A., Bayati, M. R, Sadrnezhaad, S.K. (2010). Self-assembly of boehmite nanopatels to form 3D high surface area nanoarchitectures. Applied Physics A: Materials Science & Processing, 99(1), 317-321

Bayati, M.R., Zargar, H.R., Molaei, R., Golestani-Fard, F., Zanganeh, N., and Kajbafvala, A. (2010). MAO-synthesized Al2O3- supported V2O5 nano-porous catalysts: Growth, characterization, and photoactivity. Applied Surface Science, 256(12), 3806-3811

Zabet, M., Moradian, S., Ranjbar, Z., and Zanganeh, N. (2016). Effect of carbon nanotubes on electrical and mechanical properties of multiwalled carbon nanotubes/epoxy coatings. Journal of Coatings Technology and Research, 13(1), 191-200.

Presentations

Naderi, A., Zanganeh, N., Martin, M. (2019). Creating Opportunities for Waste Minimization of Recycled Drilling Fluids Using Plant-Based Scavengers. Oil & Gas Environmental Conference, Dallas, Texas, USA.

Zanganeh, N., and Zabet, M. (2016). Studying the effect of ethanol and operating temperature on purification of lactulose syrup containing lactose. World Academy of Science, Engineering and Technology, International Journal of Biological, Biomolecular, Agricultural, Food and Biotechnological Engineering, 9, 342-345

Zabet, M. and Zanganeh, N. (2015). Effect of carbon nanotubes on mechanical properties of multi-walled carbon nanotubes/epoxy coatings. International Conference on Metallurgical Coatings and Thin Films, San Diego, USA.

Zanganeh, N., Zabet, M., Hafez Balavi and Farbod Sharif (2015). Separation of lactose from lactulose syrup: Statistical perspective. International Conference and Expo on Separation Techniques, San Francisco, USA. DOI: 10.4172/2157-7064.S1.011

Zabet, M., Zanganeh, N., Balavi, H., Sharif, F., Noodeh, M. B. (2015). Improving the electrical conductivity of epoxy coating using carbon nanotube by the electrodeposition method. International Conference on Nanostructured Materials and Nanotechnology, Miami, USA.

Zanganeh, N., Balavi, H., Sharif, F., Zabet, M., and Noodeh, M. B. (2015). Effect of aging time on CeO2 nanoparticle size distribution synthesized via sol-gel method — International Journal of Materials and Metallurgical Engineering, Miami, USA.

Zanganeh, N., Toghiania, H., Srinivasan, K. K., Krishnan, S. R., and Keith, J. M. (2015). Fabrication and characterization of Ultrasmall Au-Cu nanoalloy clusters encapsulated by Silica for high-temperature catalysis. American Institute of Chemical Engineers (AIChE), Salt Lake City, USA.

Zanganeh, N., Hafez Balavi, Farbod Sharif, Mahla Zabet. (2015). Effect of calcination temperature on CeO2 nanoparticle Size distribution synthesized via microemulsion method. 4th International Conference on Nanotek & Expo, San Francisco, USA.

Zanganeh, N., Toghiania, H., Srinivasan, K. K., Krishnan, S. R., and Keith, J. M. (2014). Low-temperature oxidation of carbon monoxide produced by diesel-ignited methane dual fuel low-temperature combustion in a single-cylinder diesel engine. American Institute of Chemical Engineers (AIChE), Salt Lake City, USA, Atlanta.

Zanganeh, N., Farbod Sharif, Hafez Balavi, Mahla Zabet. (2015). Photocatalytic activity of N-doped TiO2 produced by solgel method and the anodizing method in the degradation of RO-16. 4th International Conference on Nanotek & Expo, San Francisco, USA.

Zanganeh, N., Farzin Zokaee Ashtiani and Mohsen Mosehn-nia (2011). Experimental and Theoretical Study of Lactose solubility in Ethanol/Water Mixture. 3th Technical Conference of Thermodynamics, Rasht, Iran.

Zanganeh, S., Kajbafvala, A., Zargar H.R., and Zanganeh N. (2009). Boehmite nanopetals self-assembled to form high surface area 3D nanoarchitecture. North Carolina Symposium, North Carolina, USA.

Peer Reviews

Reviewer, Journal of Nanotechnology (2015- Present)

Reviewer, Journal of Scientific World (2014- Present)

Reviewer, International Journal of Metals (2014- Present)