

TEXAS A&M UNIVERSITY AT QATAR, www.qatar.tamu.edu
CHEMICAL ENGINEERING PROGRAMPost-doctoral position available
January 2020

A post-doctoral research position is immediately available under the supervision of Professor Ioannis Economou at the Chemical Engineering Program of Texas A&M University at Qatar (TAMUQ) related to the project “Innovative Asymmetric Mixed Matrix Hollow Fiber Membranes for Gas Mixture Separation” funded by the Qatar National Research Fund (QNRF) and co-funded by the Qatar Shell Research and Technology Center.

The goal of the project is to develop innovative scalable approaches to prepare asymmetric metal-organic framework (MOF)-based mixed matrix hollow fiber membranes and their first-ever modules as well as to finely control their molecular sieving properties for the separations of mixture gases under consideration. Gas mixtures of interest include, among others, C₂H₄/C₂H₆, C₃H₆/C₃H₈, N₂/CH₄, and CO₂/CH₄. The practical separation applications of energy-efficient membranes are hindered mainly due to the limitations of 1) current membrane materials (i.e., polymers) and 2) current processing technologies of new membrane materials. Metal-organic frameworks (MOFs), in particular zeolitic-imidazolate frameworks (ZIFs), offer unique opportunities for gas separations (e.g., ZIF-8 membranes for C₃ separation). Polycrystalline MOF membranes are, however, prohibitively expensive. Over the last two decades, mixed matrix membranes (MMMs), such as composite polymer membranes with more selective fillers including MOFs (ZIFs), have been extensively studied as an evolutionary solution. The project involves experimental work on synthesis and characterization of new membranes and computational work at the molecular and mesoscopic level. This post-doctoral position refers to the computational part of the project.

The project involves collaboration between the research groups of Professors Economou at TAMUQ and Hae-Kwon Jeong at Texas A&M University (TAMU) in College Station, Texas, USA.

An ideal candidate is expected to have:

- A PhD degree in Chemical Engineering, Physics, Physical Chemistry or Materials Science with emphasis on molecular simulation of complex fluids and/or membranes,
- A strong publication record,
- Excellent programming skills in Fortran or C / C++,
- Excellent knowledge of at least one molecular simulation package such GROMACS, LAMMPS, NAMD, etc.,
- A proven track record of successfully delivering complex software development projects,
- Strong cross-platform development skills (Linux, Windows) using modern toolkits,
- Good interpersonal communication skills.

The position is based in Doha, Qatar. It is available immediately, for an initial period of one year that can be extended, based on progress. The search will remain open until the position is filled. Salary depends on qualifications and previous experience and is in the range of USD 3,500 – 4,000 monthly. Incentives include fully furnished accommodation, Pre-K through 12 education assistance for eligible dependents, and group health insurance.

Interested candidates should contact Professor Ioannis Economou at ioannis.economou@qatar.tamu.edu. The complete application should include a detailed CV, 3 suggested names for letters of reference, and copies of undergraduate and graduate transcripts. More information about TAMUQ can be found at: <http://www.qatar.tamu.edu>.

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