Shirin SHARIFI KHOBDEH

Home Country
Iran

Degree
PhD in Chemical Engineering

Expertise
Chemical Engineering

Research Focus
Drop Deformation and Breakup in Two-Phase Systems

Host University
The Pennsylvania State University, United States

Fellowship Awarded
2006

Shirin Sharifi Khobdeh was born in Tehran, the capital city of Iran. She is married and has two younger brothers, both of whom are pursuing engineering careers. She says her parents fully supported her own career aspirations to be an engineer.

Shirin received her undergraduate degree in chemical engineering from Amirkabir University of Technology, the most prominent university in chemical engineering in Iran. She did her graduate studies at the Isfahan University of Technology, also one of the highest ranking universities in Iran, where she earned her master's degree and graduated with a grade point average of A. She then worked for a few years before joining the doctoral program in chemical engineering at The Pennsylvania State University (Penn State) in 2006.

Shirin is working on drop deformation and breakup in pressuredriven flows within viscoelastic two-phase systems. She is examining the effects of confinement geometry on deformation of viscoelastic drops, mechanisms of drop breakup and critical conditions for drop breakup where the drop and often the suspending fluid consist of a viscoelastic polymer solution. Her experimental observations of drop shape at various concentrations of the polymer solution are intended to provide insight into the role of elasticity in drop dynamics. As the strength of the imposed flow increases, large drops eventually become unstable and break up. Fluid elasticity has a significant effect on the breakup behavior of drops, and different modes of drop breakup may be observed depending on the polymer concentrations in the interior and exterior phases. Her research is finding that the critical capillary number for the onset of drop breakup is a decreasing function of drop size. The ability to predict drop deformation and breakup has important implications for a number of industrial applications including tertiary oil recovery processes; polymer processing operations; production of foams, cosmetics and various food products; motion of blood cells through vessels and pore-scale models for two-phase flow through porous media.