



## Emma del Carmen Gonzalez Gonzalez

Ph.D. Student in Chemical Engineering, admitted Autumn 2017

### Research & Scholarship

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#### CURRENT RESEARCH AND SCHOLARLY INTERESTS

My current project aims to improve understanding of intracellular mechanical transport utilizing our group's newly developed and evolving computational model, where confinement and particle shape, size, and interactions are aimed toward rigorous modeling of the key transport processes in a model eukaryotic cell. My study focuses on the dynamics of a confined polydisperse suspension where particles interact via many-body hydrodynamic and lubrication interactions, as well as via attractive and repulsive interactions, as they undergo colloidal-scale transport driven by thermal fluctuations and by deterministic forces (as would be generated by the towing of molecular motors). Our approach combines the non-equilibrium statistical mechanics and low-Reynolds number hydrodynamics theory with Confined Stokesian Dynamics simulations. My goal is to understand the changes in particle configuration, motion, phase behavior, and self-organization that can arise as a result of the interplay between microscopic forces, changes in concentration, confinement, and active motion.