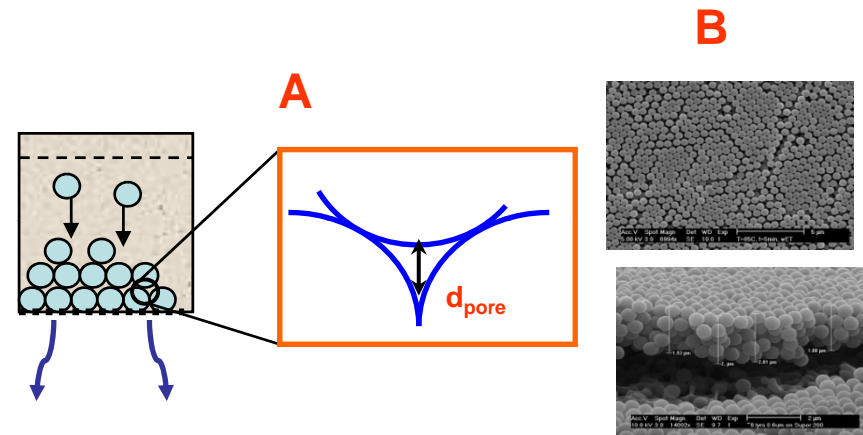




Latex Composite Ultrafiltration Membranes

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The goal of the work is to synthesize novel ultrafiltration membranes from colloidal particles. Recent work has shown that membranes formed from colloidal particles have a narrower pore size distribution and higher flux than commercially available membranes. The aim now is to synthesize membranes from colloidal particles with pore sizes in the nanometer range ($<50\text{nm}$). The hypothesis is that this can be achieved using mixtures of particles as a more efficient packing can be obtained when particles of different sizes are used. Two different techniques of assembling particles on a substrate will be used in this work – filtration and spin coating. Till date we have setup the equipment for characterization of membranes, synthesized latex and silica particles and are in the process of synthesizing the membranes and characterizing them.



(A) Schematic of formation of latex composite membranes (LCM) by filtration of colloidal particles. The interstitial spaces between the particles serve as narrow dispersed pores for size separations. (B) Scanning Electron Micrograph of a LCM (top and bottom views) of $0.62\ \mu\text{m}$ particles.