Abstract Submitted
for the DFD19 Meeting of
The American Physical Society

Simulations of small particle deposition on a membrane filter pore using the immersed boundary method SCOTT WEADY, New York University - Courant Institute, PEJMAN SANAEI, New York Institute of Technology — Membrane filters have widespread use in the medical, biotech and food science industries, among many others, and their design relies on modeling the flow and fouling mechanisms relevant to each specific application. In this talk, we describe immersed boundary method simulations of the fouling of a membrane filter pore by small particle deposition. The distribution of particles evolves according to an advection-diffusion equation driven by Stokes flow which is coupled to an adsorbtion model. We consider pressure driven flow through a rigid pore as well as constant flux through an elastic pore, and compare our results with those of several asymptotic models based on the order of the Péclet number and the pore aspect ratio.

Scott Weady
New York University - Courant Institute

Date submitted: 31 Jul 2019 Electronic form version 1.4