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Membrane filtration with multiple species of particles[1] YIXUAN SUN, LINDA CUMMINGS, LOU KONDIC, NJIT — Membrane filtration is widely used in many applications, ranging from industrial processes to everyday living activities. Fouling is an unavoidable part of filtration and understanding the particle fouling mechanism is critical for improving the filtration performance and avoiding filtration failure, hence this is a topic of much ongoing research. Experimental studies can be very valuable, but are expensive and time-consuming, therefore theoretical studies offer potential as a cheap and predictive way to improve on current filter designs. The majority of theoretical research focuses on filtration of suspensions that consist of chemically homogeneous particles. In this work we propose a model for filtration of a suspension containing an arbitrary number of particle species, each with different affinities for the filter membrane. We present preliminary results showing how the presence of additional species can change filtration outcomes.

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Yixuan Sun
New Jersey Institute of Technology (NJIT)

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