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Binding and Unbinding of Vesicles and Capsules in Axisymmetric Flow L. GARY LEAL, MARTIN KEH, University of California, Santa Barbara — Prof. Andreas Acrivos pioneered the use of scaling and asymptotic analysis, as well as the use of boundary integral methods, by chemical engineers in fluid flow and transport problems. These are skills that have been used by many of his former students in their own research. Here we consider the title problem using a combination of boundary-integral based numerical methods and scaling analysis to study the dynamics and mechanisms of adhesion and de-adhesion of vesicles at a solid boundary in the presence of flow. The adhesion process is dominated by drainage of the thin film down to a point where non-hydrodynamic attractive forces cause adherence. The unbinding process is dominated by peeling, though the final force to pull a vesicle from a solid surface is larger than expected due to lubrication effects.

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