

Abstract Submitted
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Dynamics of a compound vesicle: analytical modeling YUAN-NAN YOUNG, New Jersey Institute of Technology, SHRAVAN VEERAPANENI, New York University, JERZY BLAWZDZIEWICZ, Texas Tech University, PETIA VLAHOVSKA, Brown University — Extensive work, both numerical simulations and analytical modeling, on these dynamics provide insights to understanding the suspension phenomena of vesicles in experiments. Recently, they have been used as a multi-functional platform for drug-delivery. In this work the dynamics of such compound vesicles is investigated analytically using the small-deformation method. Results show that for a vesicle enclosing a rigid particle in a simple shear flow, transition from tank-treading to tumbling is possible even in the absence of viscosity mismatch in the interior and exterior fluids. Comparison with results from numerical simulations will be presented, and the rheology of suspension of such compound vesicles will be discussed.

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