

Abstract Submitted
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Gravitational Interactions of Slightly Deformable Drops in a Vertical Temperature Gradient JOHN STARK, MICHAEL ROTHER, University of Minnesota Duluth — For the case of low Reynolds and Marangoni numbers, collision efficiencies are calculated for two interacting, slightly deformable drops moving due to combined gravitational and thermocapillary driving forces. The solution technique employs ideas borrowed from matched asymptotic expansions. Also, as separate solutions are required for both the outer region, when there is a large separation between the drops, and the inner region, when the drops are in apparent contact, some investigation is made into the approach for the matching or transition region. Using bispherical coordinates to determine the mobility functions along the drops' line of centers, the outer region solution yields the contact force for the inner region solution. The inner region solution utilizes the thin-film equations for drops with fully mobile interfaces. Van der Waals forces are neglected in the outer region but become important in the inner region. This work has possible applications in materials processing and low gravity operations.

John Stark
University of Minnesota Duluth

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