

Abstract Submitted  
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**Modelling and Simulation of Spin Coating on a Spherical Substrate**<sup>1</sup> ROSS SHEPHERD, MATHIEU SELLIER, University of Canterbury, EDOUARD BOUJO, Ecole Polytechnique Federale de Lausanne — What do solar cells, printed circuit boards, microprocessors, and LED displays have in common? They are essential to 21st-century life, and they are all limited to flat geometries by the use of spin coating during manufacturing. Here, we present a lubrication-based model for the flow of a thin film on a rotating sphere. This was used to model spin coating a polymer film, which cures over time, on a spherical substrate. We see that centrifugal force causes the accumulation of fluid in a distinct peak near the equator of the sphere. We investigate the effect of varied substrate kinematics and film thickness, as well as the impact of different fluid properties. Finally, we briefly consider the effect of rotation on the spreading of a fluid film from a non-uniform initial condition. Overall, the uniformity and smoothness of the coated film consistently worsened as a result of spin coating, compared to the effect of gravity only.

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