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Dielectric coating dynamics in electrified coaxial jets ALVARO G. MARIN, Dept. Aerospace Eng., Univ. of Seville., IGNACIO G. LOSCERTALES , Dept. Mech. Eng., Univ. of Malaga , ANTONIO BARRERO, Dept. Aerospace Eng., Univ. of Seville. — Electrified coaxial jets generated from compound electrified menisci (compound electrosprays) have demonstrated their ability to produce particles with complex core-shell structure (I.G. Loscertales et al., Science, 295, 1695 (2002); JACS, 126, 5376 (2004)). Since at least one of the liquids forming the compound meniscus must be relatively conductive, two configurations are possible: the conducting liquid being in or out. In this work we shall consider the first configuration, whose applications range from simple protection of volatile liquids by non-volatile dielectric liquids to encapsulation by using dielectric polymer melts. Although the scaling law for the electric current transported by the electrified coaxial jets has been recently investigated (Lopez-Herrera et al.,JAS ,34, 535 (2003)), the dynamics of the coating layer is still not completely understood. The aim of this communication is to gain insight on the dependence of the coating thickness on the injected liquid flow rates, the viscosities of both liquids and surface tensions (liquid-liquid and liquid-air).

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