

Superwetting Coatings inside Capillary Tubes for In-Vitro Diagnosis

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Abstract Capillarity is a crucial and pervasive phenomenon in nature and has found important applications in wearable electronics, medical devices, miniature energy conversion and storage systems. Superwetting coating plays an essential role in drag reduction, corrosion resistance, heat transfer enhancement, and so on. However, it remains a great challenge to prepare such a coating of superwettability inside capillary tubes, in view of the spatial confinement. This presentation introduces the fabrication of uniform and superwetting coatings at capillary tubes (inner diameter 0.3–10 mm). The method of coaxial anodization is discussed. Theoretical equations are derived to compute the intrinsic contact angles at the tubular system. Their applications in drag reduction and in-vitro diagnosis are demonstrated and discussed.

Keywords In-Vitro Diagnosis, Sampling Needle, Coating, Superwetting, Electrochemical Anodization.

Reference

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