

Growth and kinetics of Ag films synthesised at liquid-liquid interface

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Abstract: The self-assembly process at the interface between two immiscible liquids is an important method of preparing ultra-thin nanocrystalline films. The reaction is between the organometallic compound in the organic layer and the reducing agent in the aqueous layer. It is a substrate free synthesis; thus, freestanding films of required materials can be synthesised at the interface. In this work, $\text{Ag}(\text{PPh}_3)_4\text{NO}_3$ precursor is dissolved in toluene and allowed to stand with aqueous solution of NaOH and hydrazine as reducing agent for the formation of freestanding Ag films. We have studied the growth kinetics using UV-VIS-NIR spectroscopy in order to understand the surface plasmon effect with growth time. Structural properties were studied using X-ray diffraction technique (Figure 1) and morphological features were studied using scanning electron microscopy.

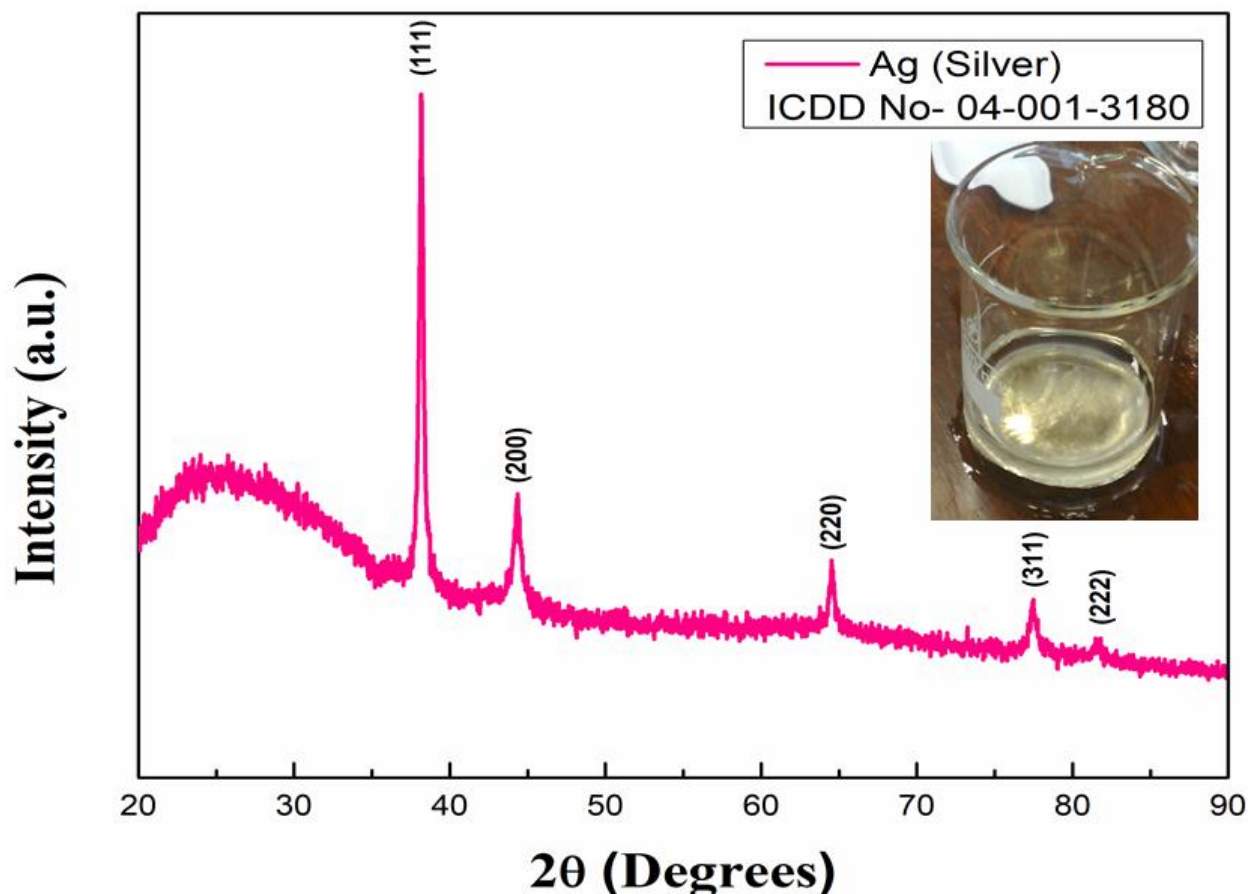


Figure 1: XRD spectra of Ag films synthesised using liquid-liquid interface (inset Ag films at interface).