

Abstract Submitted
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Exploration of Solvent Effects On Morphology of Polyaniline & Other Polymer Films Deposited Through RIR-MAPLE ENRIQUE BARRAZA, ADRIENNE STIFF-ROBERTS, Duke University — Through the use of aromatic solvents with varying numbers of hydroxyl and methyl moieties, there is an opportunity to positively impact morphology of polymer films deposited through emulsion-based Resonant-Infrared Matrix-Assisted Pulsed Laser Evaporation (RIR-MAPLE). These more complex solvents may result in smaller emulsified particles within the target, such that smoother films are achieved. We hypothesize the amphiphilic nature of polymers, like doped Polyaniline, requires a solvent with the same solubility to form a stable emulsion target. Control over the emulsion and resulting film properties can yield beneficial device properties, like low contact resistance. Our hypothesis is also tested against hydrophobic polymers, like P3HT, which have been deposited successfully using RIR-MAPLE with chlorobenzenes as the solvent family. We propose that the addition of hydroxyl moieties to the aromatic ring of the solvent should also yield more control over the film morphology. Atomic force microscopy, UV-Vis absorbance, and dark current density-voltage measurements of the resulting films will be reported, as well as a discussion of how these results relate to previously understood paradigms in RIR-MAPLE deposition.

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