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ABSTRACT

Negative refractive index (NRI) metamaterials with simultaneously negative permittivity and negative permeability have recently experienced tremendous fundamental and practical interest due to their unique electromagnetic properties. In this work, polythiophene (PTh) thin films were synthesized using an in situ chemical oxidative polymerization route. The double negative characteristics (negative permittivity and permeability) appeared simultaneously in the as-prepared PTh thin films. The structural and microstructural characterizations of as-deposited PTh thin films were examined through different techniques including XRD, FESEM, TEM, XPS and FT-IR spectroscopy. Furthermore, microwave absorption properties such as reflection loss (RL), shielding effectiveness (SE) of the PTh thin films with

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