

Abstract Submitted  
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**Magnetic resonance in ferromagnetic films, multilayers and nanoparticle composites** NATALIA NOGINOVA, BRITTANY BATES, Norfolk State University, NICOLE GREENE, None — Incorporation of magnetic materials into metamaterial systems provides an opportunity to tune microwave permeability with external magnetic field. We studied magnetically dependent microwave properties of polymer composites with iron oxide nanoparticles, ferromagnetic films and ferromagnetic/dielectric multilayers. We show that the permeability of such systems can be magnetically tuned from positive to negative values in the range of ferromagnetic resonance, strongly affecting wave propagation. Strong changes in mu-metal permeability in low field range provides an additional possibility of tuning.

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