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Magnetic dipole systems for probing optical magnetism N. NOGINOVA, G. ZHU, M. MAVY, M.A. NOGINOV, NSU, Norfolk, VA, I.V. BONDAREV, NCCU, Durham, NC — Recent advances in plasmonic-based metamaterials show that magnetic component of the optical field can be strongly modified by properties and geometry of metallic nanostructures, leading to such interesting effects as negative magnetic permeability and magnetic resonance in optical range. To probe such effects experimentally, systems containing rare-earth ions having magnetic dipole-related transitions can be used as spectroscopic tools. We report development, first experimental results and theoretical consideration of such systems based on Eu^{3+} ions.

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