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Magnetization Dynamics of Organic-based Magnetic Heterostructures MICHAEL CHILCOTE, YU LU, HAILONG WANG, FENGYUAN YANG, EZEKIEL JOHNSTON-HALPERIN, Dept. of Physics, The Ohio State University — We present temperature dependent ferromagnetic resonance measurements of both isolated magnetic films and bilayers, including all organic and organic/inorganic hybrid magnetic heterostructures. These results establish organic magnetic heterostructures as an exciting new materials platform for the exploration of the fundamental mechanisms driving magnetic ordering in organic-based materials and promise the extension of organic spintronics into the regime of dynamically-driven spin currents, such as those found in spin pumping. The low cost, low-temperature conformal deposition of organic-based thin film magnets makes them an attractive class of materials for device applications. For example, they offer the potential for novel applications in high frequency magnetoelectronics on flexible substrates. Our materials are of the form M[Acceptor]$_x$ (M = transition metal, x $\approx$ 2), exhibit room temperature magnetic ordering, and provide the opportunity to tailor magnetic properties through the selection of the transition metal ions and organic ligands. In particular, we focus on ferrimagnetic films and heterostructures where M = vanadium and the organic ligands are tetracyanoethylene (TCNE), ethyl tricyanoethylene carboxylate (ETCEC), and methyl tricyanoethylene carboxylate (MeTCEC).

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