

Abstract Submitted
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Contacting Organic and Organometallic Monolayers with Ferromagnetic Electrodes¹ PATRICK TRUITT, ISAAC KHALAF, HOWARD YU, Dept. of Physics, The Ohio State University, MALCOLM CHISHOLM, Dept. of Chemistry, The Ohio State University, EZEKIEL JOHNSTON-HALPERIN, Dept. of Physics, The Ohio State University — A key technical challenge on the way to functional molecular spintronic devices is solving the so-called “contact problem.” That is, how to robustly make electrical contact to such devices without damaging the molecular system. Methods that have been shown to have varying degrees of success in solving this problem for charge based devices include deposition of a passivating layer, either thermally (e.g. TiO_x) or by atomic layer deposition (e.g. Al_2O_3), as well as lift-off, float-on electrodes. We present data assessing the utility of these methods for depositing ferromagnetic electrodes onto fatty acid Langmuir-Blodgett monolayers as an eventual means of studying molecular spin transport. The morphology of the deposited electrodes, measured by AFM, is compared with the quality of the underlying monolayer, examined by Brewster angle microscopy, contact angle analysis and AFM. Progress towards fabricating molecular magnetic tunnel junctions with one or more of these techniques will be discussed.

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