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Self-Limiting C_{60}-Pentacene Network on Ag(111)[1] WEI JIN, University of Maryland, DANIEL DOUGHERTY, National Institute of Standards & Technology, GREGORY DUTTON, WILLIAM CULLEN, University of Maryland, STEVEN ROBEY, National Institute of Standards & Technology, JANICE REUTT-ROBEY, University of Maryland — During Scanning Tunneling Microscopy investigations of C_{60}:Pentacene (Pc) interfaces on Ag(111), we identified a new network structure. This binary arrangement forms readily by sequential deposition: Pc, of ∼0.3 mL coverage, is first evaporated onto the Ag(111), forming a 2-D gas. Subsequent C_{60} deposition produces a network, consisting of chains of close-packed C_{60} molecules, spaced by C_{60} molecules. The characteristic 1 x 2.5 nm^2 pores are sized to accommodate Pc molecules. Spontaneous formation of this structure from an iniital Pc coverage ranging from 0.3 to 0.6 mL, indicates a self-limiting assembly process. Drawing upon topographic and Z(V) measurements, we propose a structural model and describe molecular mechanisms that could cause this self-limiting behavior.

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