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**Electrostatic Origin of Meandering C<sub>60</sub> Chain Formation at ZnPc Interfaces**<sup>1</sup> JANICE REUTT-ROBEY, QIANG LIU, LEVAN TSKIPURI, WEI JIN, JOHN WEEKS, University of Maryland, DANIEL DOUGHERTY, NC State University, STEVE ROBEY, NIST — We present STM investigations of interface-formation and nanophase separation in binary films of zinc phthalocyanine (ZnPc) and C<sub>60</sub> on Ag(111) and Au(111) supports. We report ZnPc:C<sub>60</sub> 1-D and 2-D interfaces with distinctive molecular orientations and unusually low C<sub>60</sub> packing densities. Meandering C<sub>60</sub> chains of single-molecular width arise without registration to the underlying ZnPc template, islanding into a disordered chain phase. These structures are reminiscent of dipole fluids (albeit of single molecular widths!) We present detailed measurements and analysis of C<sub>60</sub> wandering chain formation on ZnPc/Ag (111) and ZnPc/Au (111) substrates. We explore the physical origin of these structures through simulations with a model potential that incorporates short-range C<sub>60</sub> – C<sub>60</sub> attraction and a long-range dipolar repulsion. From simulations of realized structures, we estimate the effective dipole needed for chain formation. DFT calculations on the C<sub>60</sub>/ZnPc/Ag(111) structure support these conclusions and provide more detailed insight on the electrostatic interactions that drive chain formation.

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