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The structures of a C_{60} monolayer on Al(111) HEEKEUN SHIN, HSIN-I LI, The Pennsylvania State University, KATARIINA PUSSI, Lappeenranta university of technology, RENEE DIEHL, The Pennsylvania State University — The interfaces of C_{60} films with metal surfaces are of particular interest for molecular electronics applications. The electronic properties of these films are known to depend strongly on their structures and the relative molecular orientations of the C_{60} molecules, yet there are few detailed structure determinations for C_{60} films. When grown at room temperature, C_{60} on Al(111) forms a $(2\sqrt{3}\text{x}2\sqrt{3})\text{R}30^\circ$ structure with one C_{60} molecule per unit cell, which upon heating converts to a 6x6 structure with 3 C_{60} molecules per unit cell. We present a LEED study of the transition between these structures, a LEED I(E) analysis of the 6x6 structure, and characterization of the adsorption of rare gases onto the surface of the 6x6 C_{60} film. This research is supported by NSF-DMR-0505160 and the Academy of Finland.

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