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Elucidating the Equilibrium States of C60 molecules on Ag(111)
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The properties of C_{60} on surfaces depend strongly on their local geometries, but until recently there were few quantitative studies for these structures. The interactions of C_{60} molecules on Ag(111) surface produce an interesting structural complexity that manifests as a competition between two geometrical states. We studied the most stable $(2\sqrt{3}x2\sqrt{3})R30^o$ phase of C_{60} on Ag(111) by using STM, LEED, and DFT. This phase consists of molecules in two different geometrical states - one sitting on a C-C bond on the top site and one sitting on a hex face on a vacancy. By measuring the dynamical equilibrium behavior of the system, we obtained detailed information on the energetics of two states.

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