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Probing the buried C_{60}/Au(111) interface with atoms LIN TANG, Tsinghua University, YANGCHUN XIE, QUANMIN GUO, University of Birmingham, UNIVERSITY OF BIRMINGHAM COLLABORATION — To characterize the C_{60}/Au(111) interface, we send Au atoms "diving" through the C_{60} layer and observe their behavior at the interface. Our observations show that the interfacial diffusion of gold atoms and the nucleation of small Au islands at the interface are strongly dependent on the local C_{60}-Au(111) bonding which varies from one domain to another. The contrast-disordered domain consisting of a large fraction of molecules bonded to Au vacancies has a special structure at the interface allowing Au atoms to be inserted beneath the bright-looking molecules while the dim molecules present a much stronger resistance to the diffusing Au atoms. This leads to the formation of isolated Au islands with discrete sizes, with the smallest island just about 1 nm across.

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