

Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Strong interface p-doping and band bending in C₆₀¹ IRFAN IRFAN, HUANJUN DING, YONGLI GAO, MINLU ZHANG, CHING TANG, University of Rochester, DEPARTMENT OF PHYSICS AND ASTRONOMY COLLABORATION, DEPARTMENT OF CHEMICAL ENGINEERING COLLABORATION — C₆₀ is a strongly n-type material with its lowest unoccupied molecular orbital very close to the Fermi level, and p-doping C₆₀ has been a challenging issue. We measured the electronic energy level evolution of C₆₀ on molybdenum oxide (MoO_x)/conducting indium tin oxide (ITO) interfaces with ultra-violet photoemission spectroscopy (UPS), inverse photoemission spectroscopy (IPES) and atomic force microscopy (AFM). We found that MoO_x strongly p-doped C₆₀ at the interface, resulting in an inversion layer in C₆₀. The energy levels of C₆₀ relax gradually as the thickness of C₆₀ increases, and the band bending region is observed to be greater than 400 Å in C₆₀. The root mean square (RMS) roughness measured with AFM of 581 Å thick C₆₀ film was 68 Å, slightly increased from that of the ITO substrate of 55 Å. We have also investigated the effect of exposing the MoO_x air, and found that it eliminated the doping effect.

¹NSF DMR- 1006098

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Date submitted: 14 Dec 2010

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