

Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

Gold Cluster Formation on C₆₀ Surfaces: Au-Cluster Beads and Self-Organized Structures PETRA REINKE, HUI LIU, University of Virginia — Petra Reinke, Hui Liu, Department of Materials Science and Engineering, University of Virginia The investigation of C₆₀-Au interaction is central to the advancement of solar cell and nanotechnology applications of C₆₀. C₆₀ grows in a quasi-layer-by-layer mode on a pristine graphite surface and form a special surface structure (coexistence of round and fractal islands). The deposition of Au leads to the formation of a complex array of different surface structures, while the basic island structure of the C₆₀ is preserved. The Au-clusters nucleate preferentially at the graphite-first fullerene layer islands edge forming beadlike structures. A roughness analysis of the fullerene surface indicates the presence of Au atoms embedded in the fullerene surface, situated in the troughs in between the large molecules. The analysis of the spatial and size distributions of Au clusters provides the basis for the development of a qualitative model which describes the relevant surface processes in the Au-fullerene system. The simultaneous deposition of Au and C₆₀ leads to the formation of organized structures, in which Au clusters are embedded in a ring of fullerene molecules with a constant width.

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Date submitted: 20 Nov 2006

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