

Abstract Submitted
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Fullerene nanostructures on defect-rich graphite investigated with STM MICHAEL BUETTNER, PETRA REINKE, University of Virginia, Materials Science & Engineering, 395 McCormick Road, 22904 Charlottesville, Va. — In this work we examine the feasibility of creating tailored fullerene nanostructures on Highly Oriented Pyrolytic Graphite (HOPG). Based on recent findings [M. Buettner et al., Surf. Sci., 2006, in press] we illustrate a new preparation method employing Focused Ion Beam (FIB) techniques in combination with fullerene deposition and subsequent sample annealing. The pristine HOPG surface is treated with FIB, creating a predefined structure of defects that serves as a template. Typical length scales available with FIB and relevant for our purpose are several nanometers to micrometers. Fullerene deposition performed in UHV followed by an annealing step results in fullerene-decorated defects, thus forming the final C₆₀ nanostructure. All preparation steps are accompanied by UHV Scanning Tunneling Microscopy (UHV-STM) imaging. We will discuss the formation of the C₆₀ nanostructures in detail, examine the achievable accuracy of the process, and finally comment on the viability of the proposed method for preparing functionalized molecular nanostructures.

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