JPCCCK

MARCH 27, 2014
VOLUME 118
NUMBER 12

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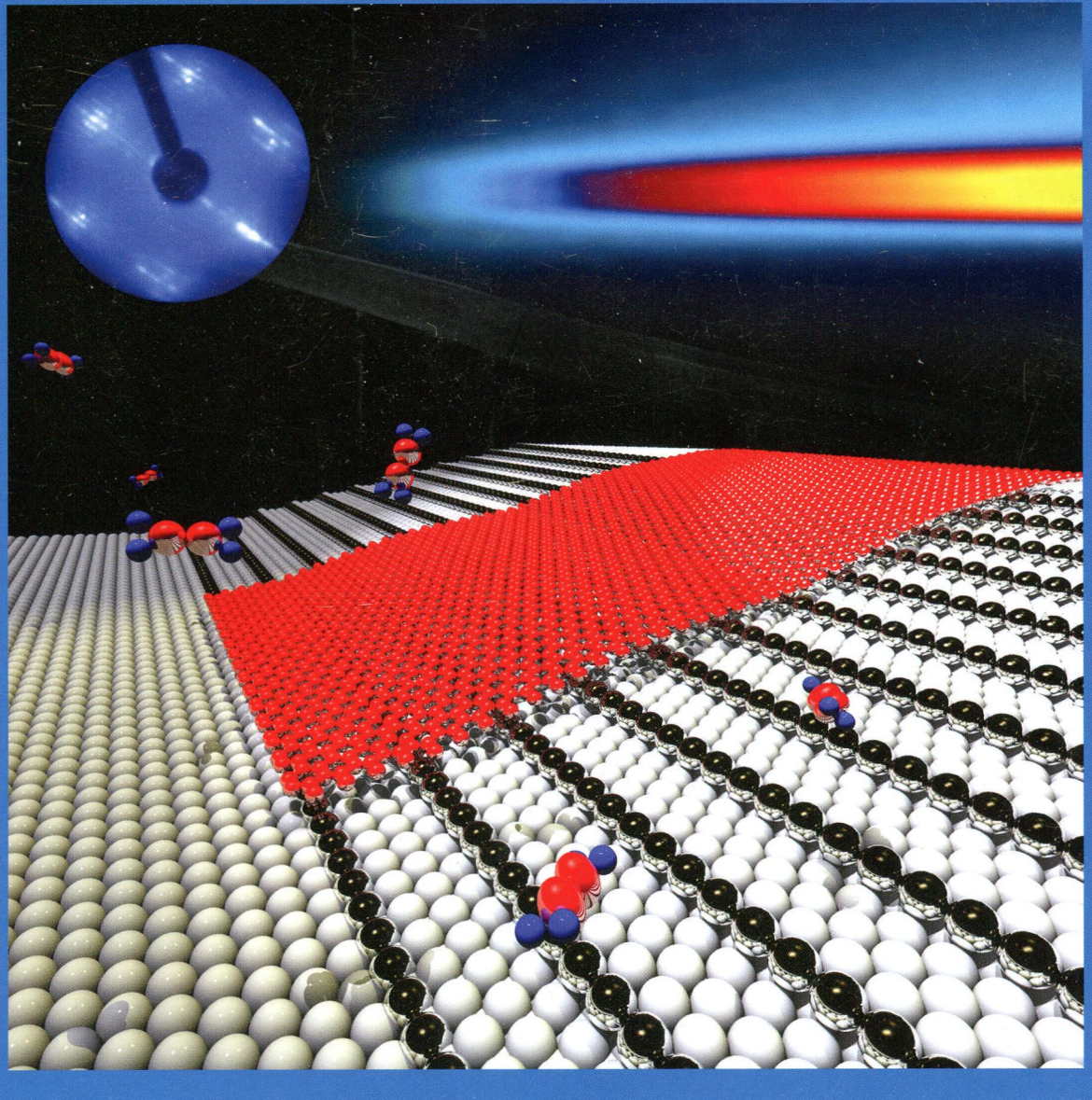
THE JOURNAL OF PHYSICAL CHEMISTRY C



Epitaxial Graphene on Vicinal Surfaces: The Thinnest Carpet Grown on the Smallest Atomic Staircase (see page 6242)

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THE JOURNAL OF PHYSICAL CHEMISTRY C

MARCH 27, 2014
VOLUME 118 ISSUE 12

JPCCCK 118(12) 5997−6536 (2014)
ISSN 1932-7447
Registered in the U.S. Patent and Trademark Office

ON THE COVER: Epitaxial graphene on vicinal surfaces: the thinnest carpet grown on the smallest atomic staircase. Perspective view of a cannon?ball model of graphene grown on Rh(533) (red, C atoms; white, terrace Rh atoms; black, step Rh atoms). The single carbon layer forms an extended film covering the atomic steps of the substrate, like a carpet on a nanoscale staircase. The structural anisotropy of the vicinal surface leads to a moiré cell with nonequivalent lattice vectors in the directions parallel and orthogonal to the steps. This is visible from the low-energy diffraction pattern of the graphene?covered substrate (top left). In the background, a waterfall plot of the C1s core level evolution during graphene growth is shown. Our results suggest a key role of the steps in promoting the formation of graphene with high structural qualities and stabilizing it against C−C bond breakup at high temperature via a step?induced defect?healing mechanism first predicted by theoretical calculations. See page 6242.

Articles

Energy Conversion and Storage; Energy and Charge Transport

Surfaces, Interfaces, Porous Materials, and Catalysis

Plasmonics, Optical Materials, and Hard Matter

Physical Processes in Nanomaterials and Nanostructures

Additions and Corrections

Ⓢ Supporting Information available via online article