

Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Photo-assisted polymerization of one-dimensional molecular arrays on epitaxial graphene TEYU CHIEN, APARNA DESHPANDE¹, CHUN-HONG SHAM, JUSTICE ALABOSON, MARK C. HERSAM², Department of Materials Science and Engineering, Northwestern University, Evanston, Illinois 60208 — Self-assembled monolayers provide opportunities to tailor the materials properties of graphene and template subsequent chemical functionalization at molecular length scales. In particular, 10,12 pentacosadiynoic acid (PCA) is found to assemble into one-dimensional arrays on epitaxial graphene on SiC(0001) as revealed by ultra-high vacuum scanning tunneling microscopy (UHV-STM). Furthermore, UV-triggered polymerization of PCA in UHV is achieved, leading to distinct conformational changes at the molecular scale. The sub-5 nm widths of these one-dimensional polymers make them promising candidates for templating the formation of graphene nanoribbons with significant band gaps. Molecular resolution UHV STM characterization of the structure and electronic properties of this nanostructured chemical functionalization strategy will be presented.

¹Indian Institute of Science Education and Research, Pashan, Pune 411021, India

²Department of Chemistry, Northwestern University, Evanston, Illinois 60208

TeYu Chien
Department of Materials Science and Engineering,
Northwestern University, Evanston, Illinois 60208

Date submitted: 26 Nov 2011

Electronic form version 1.4