Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Surface Patterning of Benzene Carboxylic Acids on Graphite: Influence of structure, solvent, and concentration on molecular self-assembly GINA FLORIO, KIMBERLY STISO, JOSEPH CAMPANELLI, KIMBERLY DESSOURCES, TRUDI FOLKES, St. John's University — Scanning tunneling microscopy (STM) was used to investigate the molecular self-assembly of four different benzene carboxylic acid derivatives at the liquid/graphite interface: pyromellitic acid (1,2,4,5-benzenetetracarboxylic acid), trimellitic acid (1,2,4-benzenetricarboxylic acid), trimesic acid (1,3,5-benzenetricarboxylic acid), and 1,3,5-benzenetriacetic acid. A range of two dimensional networks are observed that depend sensitively on the number of carboxylic acids present, the nature of the solvent, and the solution concentration. We will describe our recent efforts to determine (a) the preferential two-dimensional structure(s) for each benzene carboxylic acid at the liquid/graphite interface, (b) the thermodynamic and kinetic factors influencing self-assembly (or lack thereof), (c) the role solvent plays in the assembly, (e) the effect of *in situ* versus *ex situ* dilution on surface packing density, and (f) the temporal evolution of the self-assembled monolayer. Results of computational analysis of analog molecules and model monolayer films will also be presented to aid assignment of network structures and to provide a qualitative picture of surface adsorption and network formation.

Gina Florio
St. John's University

Date submitted: 11 Nov 2011 Electronic form version 1.4