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Challenges of Room Temperature Scanning Tunneling Microscopy investigation of carbon nanotubes on a HOPG substrate
MOREWELL GASSELLER, JESSICA RITCHIE, ERIN MCCARTHY, mercyhurst university — Highly oriented pyrolytic graphite (HOPG) is a common substrate for STM studies of carbon nanotubes. It is an ideal surface for STM because it is easily cleavable by adhesive tape, resulting in large, atomically flat planes that are relatively inert and electrically conducting. Despite these attractive attributes, the cleavage of HOPG surfaces also generates a variety of artifacts, some of which are elongated structures similar to the carbon nanotubes being investigated. Some even exhibit periodicities that mimic the atomic structures expected in the carbon nanotubes. In our investigation of SWCNT deposited on a graphite substrate, we observed and catalogued many of these commonly known filament –like artifacts. The data presented here serve as a demonstration for how we differentiated SWCNT from filament-like graphite artifacts in STM experiments.

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