Supporting Information

Nanoscale morphology, tribology and electrical properties of polyaniline/graphene oxide/LAPONITE®" ™ composites investigated using atomic force microscopy

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Additional topology and phase maps

Additional topology and phase maps for each sample are provided in Figure S1 for both 25 μm^2 and 1 μm^2 sections of the composite films. Boundaries between GO sheets appear lighter yellow in the phase images. As polymer loading increases, the relatively sparse polyaniline coverage of GOPL80 and GOPL50 gives way to dense, globular overgrowth covering GOPL10. This leads to greater variability in the topology on smaller scales as features localized to individual GO sheets are probed and the degree of polymer growth becomes the more important surface feature.

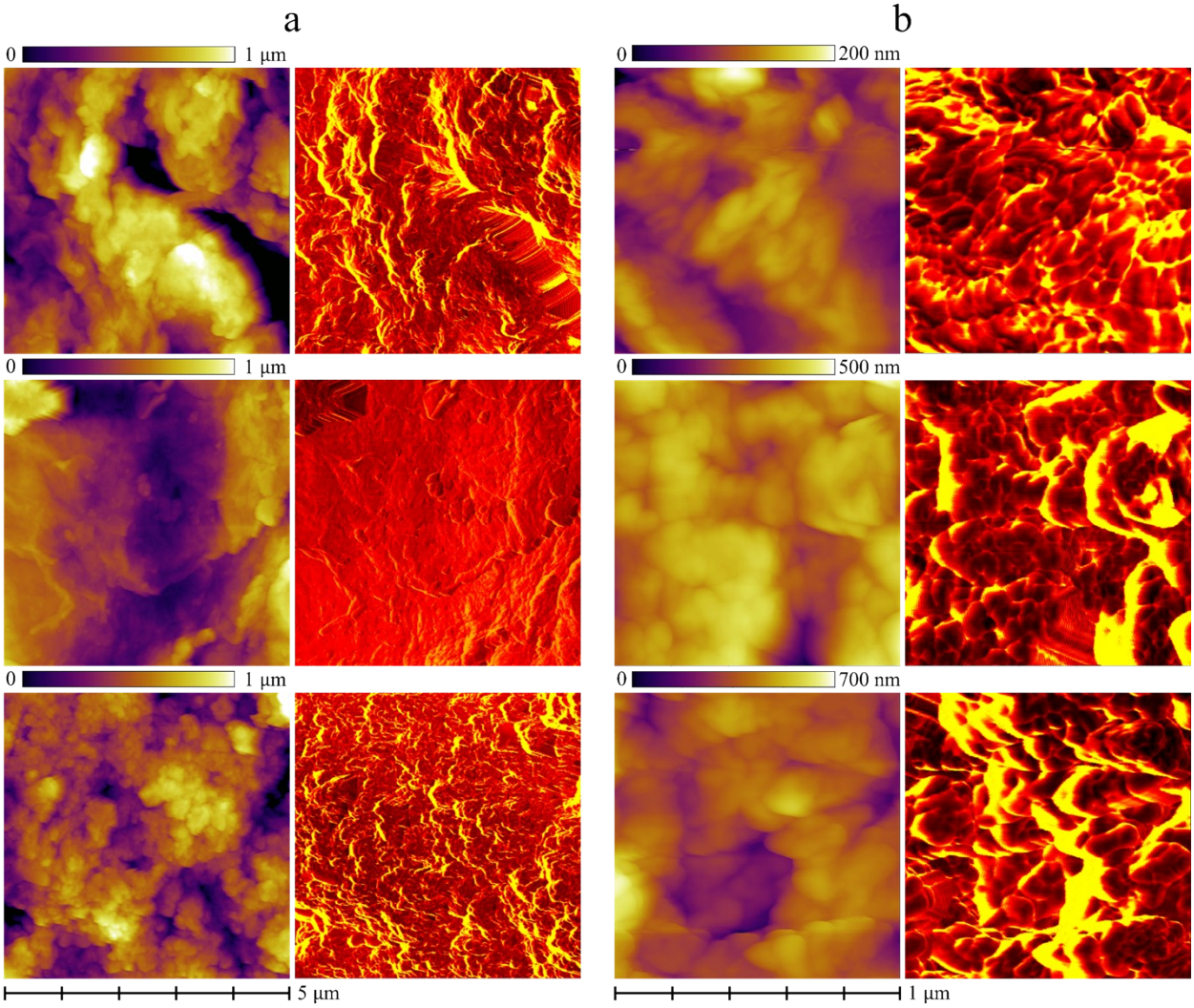

Figure S1. Topology (left panel) and phase (right panel) images for, top to bottom, GOPL80, GOPL50 and GOPL10 films collected over a) 25 μm^2 and b) 1 μm^2 film areas.

Additional current maps

Additional current maps for each sample are provided in Figure S2, collected over 4 μm^2 areas of the composite film surfaces. Across the GOPL80 and GOPL50 samples only negligible current responses were observed, typically not exceeding 50-100 pA. The much denser polymer network in GOPL10 produces a material with good electrical connectivity, shown by current responses for this sample up to ~5 nA.

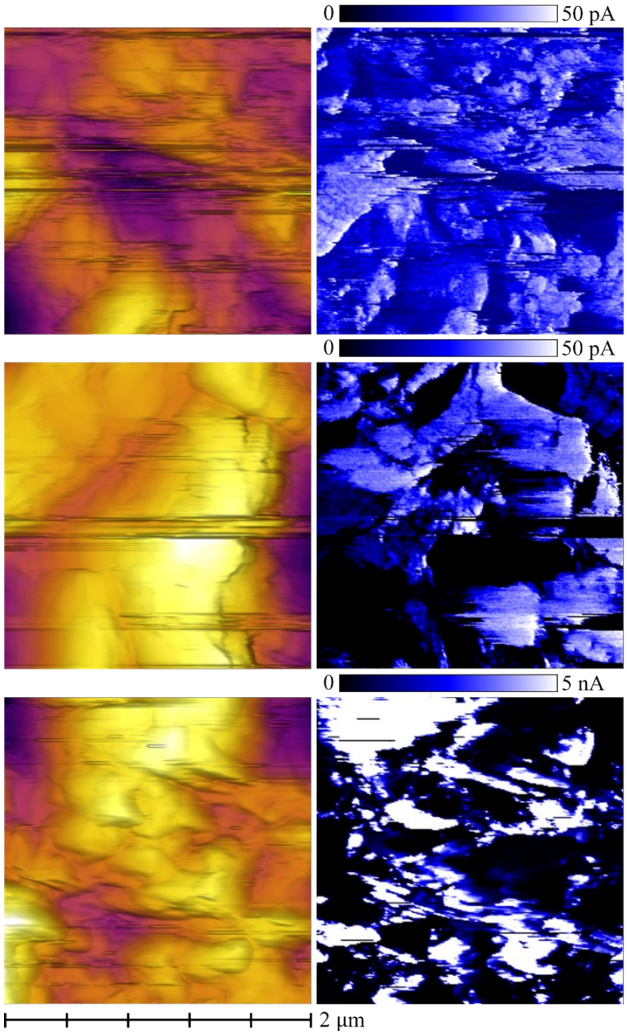

Figure S2. Topology (left) and current (right) images for, top to bottom, GOPL80, GOPL50 and GOPL10 films collected over film areas of 4 μm^2. Note that in order to display the data for GOPL10, the colour scale is changed from 0-50 pA for GOPL80 and GOPL50 to 0-5 nA for GOPL10.