

pH Effects on Trisilanolphenyl-POSS Stability

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Abstract

Polyhedral oligomeric silsesquioxanes (POSS) have been an innovative area of intense study for the past two decades. In this study, trisilanolphenyl-POSS (TPP), a molecule known to form Langmuir films at the air/water interface, was examined for stability at various pH values. Isothermal and isobaric experiments using the Wilhemy plate technique along with Brewster angle microscopy (BAM) images were used to investigate the stability of TPP on buffered subphases. This study found that the stability of TPP decreased as the basicity of the subphase increased. As the TPP rested on the subphase, hydrolysis reactions broke siloxane bonds and dissolution into the subphase occurred.