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**Trisilanolphenyl-POSS as an Adhesion Promoter** SARAH HUFFER, Department of Chemistry (0212), Virginia Tech Blacksburg, VA 24061, UFUK KARABIYIK, ALAN ESKER, Department of Chemistry (0212), Virginia Tech Blacksburg, VA 24061 — Polyhedral oligomeric silsesquioxanes (POSS) have been an innovative research area for over twenty years. Potential aerospace applications include space-survivable coatings and ablative insulation. Recent studies showed that trisilanol-POSS derivatives form monolayers at the air/water interface. The purpose of this study was to improve adhesion between ceramics and metals and metals and polymers by preparing multilayer films at various pH values and metal ion concentrations using trisilanolphenyl-POSS (TPP). Multilayer systems were created by spincoating polystyrene, using the Langmuir-Blodgett technique for TPP, and physical vapor deposition of aluminum oxide. The resulting films were characterized for quality and stability using atomic force microscopy, optical microscopy, X-ray photoelectric spectroscopy, and dewetting experiments. Initial experiments demonstrated that TPP-aluminum ion complexes facilitated smooth aluminum oxide film formation on silicon wafers while TPP alone yielded a blistered aluminum oxide surface.

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