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ARC Conference Presentation

20 February 2015

### A Process for the Production of a Stain-Resistant Polymer Application

#### Abstract:

This project comprises a stain-resistant configuration for copolymer chains of styrene maleic anhydride (SMA), as well as the process involved in the creation and application of the stain-resisting compound. The stain-blocking agent is bonded to nylon 6,6, a common component of nylon carpeting. A sample portion of nylon was created as a component for this experiment. The synthesized nylon is representative of nylon carpet fiber. As a control, we apply 0.05 molar red food dye to a portion of the nylon sample. Under controlled conditions, the food dye bonds with the polymer chains of the nylon, ultimately staining the sample. Furthermore, we will synthesize a SMA copolymer to create a stain-blocking compound that will be applied to the polymer chains of nylon. Once the stain-blocker is applied to a portion of the nylon sample, food dye will be used to test the effectiveness of the stain-blocking composition. The control group will then be compared with the experimental group. The results should show that the stain-blocker prevents the food dye from staining the nylon sample, and result in the synthesis of a successful stain-blocking agent for nylon, 6,6 carpet fibers.

**Keywords:** styrene maleic anhydride, stain blocker, nylon 6,6, copolymer