

Surface Modifiers with Anti-microbial and Hydrophobic Properties

Polymer surface characteristic control has wide-ranging benefits, especially in applications derived from biocidal and/or amphiphilic behavior. To alter surface properties, some methods, such as chemical modification, plasma, and grafting, require post-processing of bulk polymers. A preferred technique is to modify bulk polymers with additives that migrate to the surface where their properties prevail while the bulk polymer remains otherwise unchanged. Efficiency is gained by reducing process steps and minimizing the amount of modifier added. Polymeric surface modifying additives are therefore highly desirable for their combination of manufacturing efficiency and surface property control.

The technology

Inventors at Virginia Commonwealth University have successfully developed novel polymeric surface modifiers (PSMs) that control bulk polymer surface biocidal and wetting activity and incorporation of dyes, sensors, and adhesives. The biocidal activity is achieved without biocide release. Wetting behavior includes both anticipated amphiphilic response and, more significantly, a contraphilic response where surfaces are hydrophobic from water contact and hydrophilic from organic solvent contact. The method for producing these PSMs can be easily scaled-up. The PSMs could be incorporated into a variety of materials, including in surgical gloves, medical and biomedical equipment, polyurethane and other plastic products, bathroom and kitchen equipment, protective coatings for wallpaper and countertops, and exercise equipment.

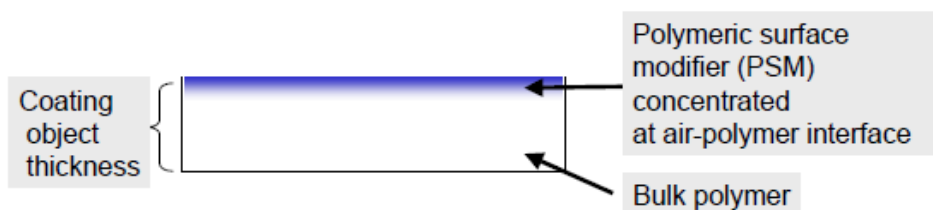


Figure 1: Schematic diagram illustrating polymeric surface modifiers (PSMs) concentrated at the air-polymer interface.

Benefits

- » Efficient manufacturing methods
- » Bulk polymer properties unchanged

Applications

- » Drainage catheters
- » Medical and biomedical equipment and devices
- » Surgical gloves, polyurethane, and other plastic products
- » Bathroom and kitchen equipment
- » Exercise equipment
- » Coatings for wallpaper and countertops

Patent status:

Patent issued: U.S. rights are available.
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License status:

This technology is available for licensing to industry for further development and commercialization.

Category:

Biomedical

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