

- o Durable, slip-resistant coatings
- o Cost Competitive

- o Conventional manufacturing process
- o Commercially available raw materials

## INTRODUCTION

This is a cost effective process utilizing commercially available raw materials and conventional manufacturing processes to produce water-based fluoropolymer-containing latexes. The latex can be applied in a variety of conventional techniques resulting in coatings that are expected to exhibit excellent adhesion, durability, and low friction properties.

## LATEX SYNTHESIS

Using a low-shear monomer-starved emulsion polymerization process, a stable water-based latex containing up to 15% fluoromonomer can be produced. A proprietary surfactant system is used to lower the surface tension of the aqueous phase, allowing the fluorine containing monomer to diffuse into the micelles and polymerize with the other co-monomers. The different diffusion rates of the fluoromonomer compared with the other co-monomers results in monomodal nonspherical colloidal particles possessing fluoromonomer blocks near the exterior of the particle.

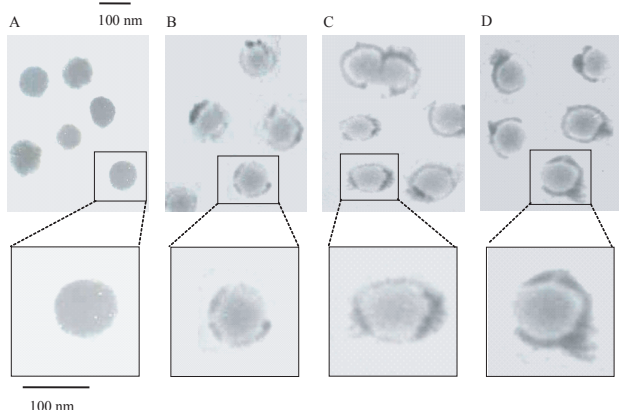


Figure 1. Electron micrographs of a MMA/nBA system, a MMA/nBA system with 3.3, 5, and 8.5% fluorinated monomer, respectively.

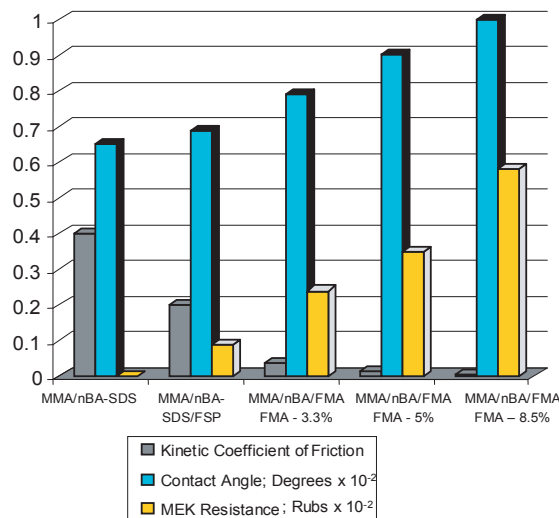


Figure 2. Kinetic coefficient of friction plotted as a function of colloidal composition. The same y-axis is used to plot contact angle measurements and MEK rub test results.

## FILM FORMATION AND PROPERTIES

Once prepared, the latex itself can be applied in a variety of conventional techniques depending on the substrate material and shape. Better adhesion is achieved on polar substrates, so pretreatment may be required for some materials.

The phase-separated films formed upon coalescence exhibit unique surface properties. Figure 2 illustrates the effect of fluoromonomer concentration on the kinetic coefficient of friction, contact angles, and MEK rubs.

## OPPORTUNITIES

This patent-pending technology is available for licensing, joint research or custom development to meet your needs.

Noetic Technologies, Inc. is an initiative of The University of Southern Mississippi geared toward marketing and commercialization of the university's technology.

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