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## **FLUOROALKYL-MODIFIED POLYSILAZANES FOR OMNIPHOBIC COATINGS**

### **Abstract:**

Organic polysilazanes belong to a family of organosilicone polymers containing Si-N linkages. These materials have been used for hydrophobic coatings but fluoroalkyl chains are required for oleophobic surfaces. We herein suggest that fluoroalkyl-modified polysilazanes to provide omniphobic nature to solid surfaces. First  $\text{CF}_3(\text{CF}_2)_7\text{CH}_2\text{CH}_2\text{SiCH}_3\text{Cl}_2$  was synthesized with 1H,1H,2H-perfluoro-1-decene and  $\text{Me}_2\text{SiCl}_2$  by hydrosilylation in the presence of Karstedt catalyst.  $\text{CF}_3(\text{CH}_2)_2\text{SiMeCl}_2$ ,  $\text{CF}_3(\text{CF}_2)_7\text{CH}_2\text{CH}_2\text{SiMeCl}_2$  or  $\text{CF}_3(\text{CF}_2)_7\text{CH}_2\text{CH}_2\text{SiMeCl}_2$  was reacted with  $\text{MeSiHCl}_2$  in the presence of  $\text{NH}_3$  and pyridine by co-ammonolysis. Final products were examined by  $^1\text{H-NMR}$ , FT-IR and TGA. Water and oil (hexadecane) contact angles were measured with dip-coated samples on glass slides. The best omniphobic sample is the copolymer between  $\text{CF}_3(\text{CF}_2)_7\text{CH}_2\text{CH}_2\text{SiMeCl}_2$  and  $\text{MeSiHCl}_2$  (7:3 weight ratio). The coated glass exhibited 110 degree and 48 degree of water and oil contact angles, respectively.

### **Keywords:**

polysilazane, hydrophobic, fluoroalkyl, oleophobic

**JEL Classification:** L65