

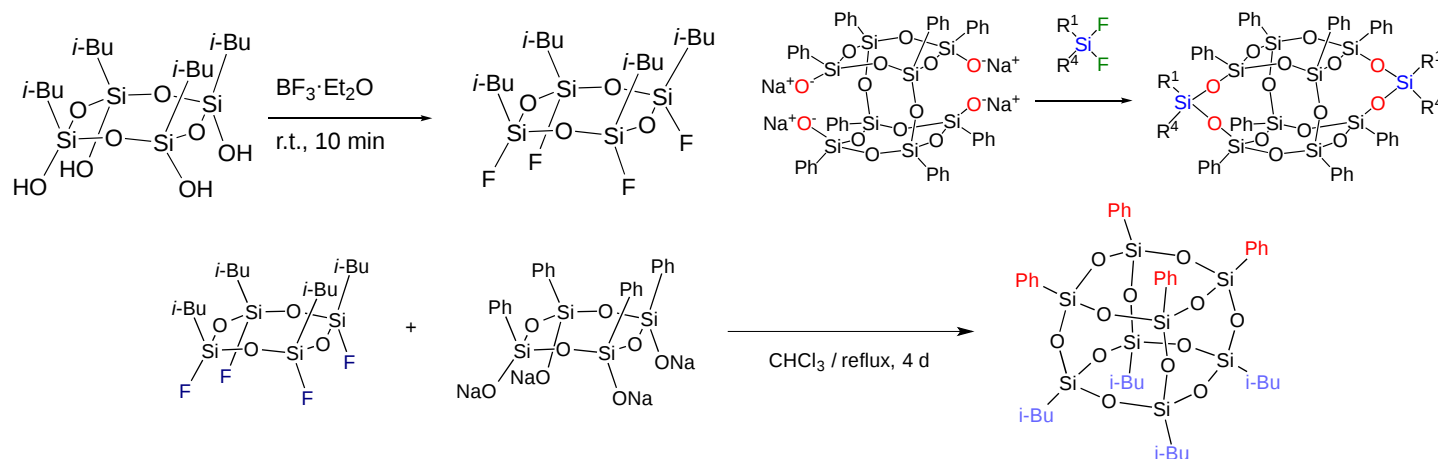


Synthesis and Application of Fluorosiloxanes

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Preparation of well-defined siloxanes is still an important topic in order to obtain high-quality electronic device materials. For the synthesis of unsymmetrical siloxanes (cross coupling), the reaction of chlorosilane and silanol was one of the major synthetic methods. The problems often observed were instability of chlorosilanes, and generation of acidic HCl. On the other hand, fluorine atom makes stronger bonding to silicon, and much more stable. We recognized that thermally-stable fluorosilane also accept reactions in ionic condition or with ionic reagents. As shown in the scheme, silanol easily afforded fluorosiloxane in a very short time, with siloxane ring remain intact.¹⁾ Also introduction of various substituents is possible and utilize double-decker silsesquioxane as versatile precursor of polymers.²⁾ The first Janus cube structure determination was possible by using fluorosiloxane as a precursor.³⁾ We also observed unusual ring-cleavage reaction of fluorosiloxanes.⁴⁾



In this presentation, I will summarize the synthesis of fluorosiloxanes and application to well-defined materials. In addition, we will also show several facile syntheses of fluorosilanes and fluorosiloxanes by less expensive reagents like KF or CsF.

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References

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