Cyclic Silanols as New Building Blocks

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Cyclic silanols, or cyclic oligosiloxanes with hydroxyl groups, were originally prepared by hydrolytic condensation from chlorosilanes. Among them, isopropyl-substituted cyclic silanol possesses both stability and reactivity, and has been serving as a potential precursor of well-defined silsesquioxanes (Scheme 1). However, because of four possible stereoisomers and incapability of the separation by chromatography, synthetic yield of this cyclic silanol was not very good. In 1996, Pozdnyakova's group reported the isolation of potassium salt of cyclic silanolates and transformation to cyclic silanols. This method enables the access to cyclic silanolates with various substituents in high yields.

In this presentation, we show the recent synthesis of cyclic silanols based on a new idea. In addition, further application of cyclic silanols to various well-defined siloxanes is also demonstrated.
References

