**Atomistic Control of Complex Polysilanes and Organic Polymers**

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Research in the Klausen Group applies the principles of target-oriented organic synthesis to polymeric targets. Examples include the cyclosilane building blocks, bifunctional inorganic monomers resembling fragments of the silicon lattice. Different cyclosilanes template distinct polymeric architectures, such that catalytic polymerization afforded controlled access to cyclic and linear polysilanes. Advances in building block design also provided fundamental organic polymers inaccessible from traditional feedstocks. BN 2-Vinylnaphthalene (BN2VN) is a masked polar monomer, with an aromatic core that imparts styrene-like reactivity. Postpolymerization functionalization converted the boron-based side chain to a hydroxyl group, resulting in the first syntheses of highly stereoregular polyvinyl alcohol and styrene-vinyl alcohol and methacrylate-vinyl alcohol copolymers. Achieving atomistic control of polymer structure ultimately provides materials with tailored properties.