In this project dynamic, polymer-based materials will be developed that are, for example, self-healing, shape-transforming, malleable or recyclable. To achieve this dynamic response, I will employ a still relatively new class of reversible bond: the dynamic-covalent bond. This bond combines the robustness of a conventional covalent bond with the reversibility of non-covalent bonds. Imine-based dynamic-covalent building blocks will be synthesized, that subsequently can be integrated into polymer networks. I will study how these polymers can lead to mechanically strong, yet still adaptive materials with smart, dynamic properties. As a first target, the design of these polymers will be focused on self-healing and shape-transforming materials.