# Exploring metallosupramolecular polymers as healable materials

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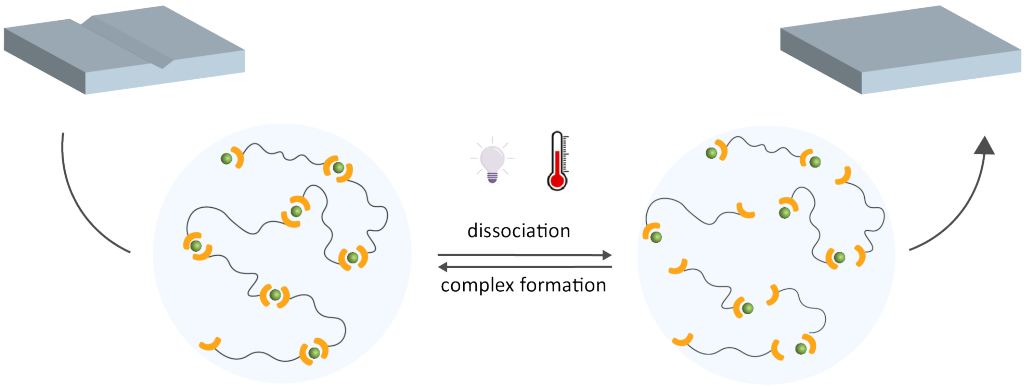
The assembly of ligand-functionalized (macro)monomers with suitable metal ions affords metallosupramolecular polymers (MSPs) through the formation of dynamic metal-ligand complexes.[1] The extent of assembly of these metal-ligand bonds can be controlled by external stimuli, such as exposure to UV light or heat. This feature enables easy processing and makes MSPs an interesting candidate for many applications, for example as healable materials.[2] In the solid state, MSPs tend to microphase-separated into domains containing the nonpolar organic residues and domains that consist of the metal-ligand complexes. The thermal and mechanical properties of MSPs are strongly influenced by the properties of the two phases, such as the glass transition temperature of the organic phase, as well as the crystallinity and melting transition of the metal-ligand phase. These properties, in turn, strongly depend on the choice of the ligand and the metal salt. We here report on MSPs assembled with the terdentate ligand 2,6-bis(1'-methylbenzimidazolyl)pyridine (Mebip) or the bidentate ligand 1'-methylbenzimidazolyl pyridine (mbp), and triflates of $Zn^{2+}$, $Fe^{2+}$, or $Ni^{2+}$. In all materials, defects can readily and fully be healed upon exposure to UV-light.

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