A Systematic Approach Towards the Synthesis of Metal Coordination Cross-Linked Polymer Networks

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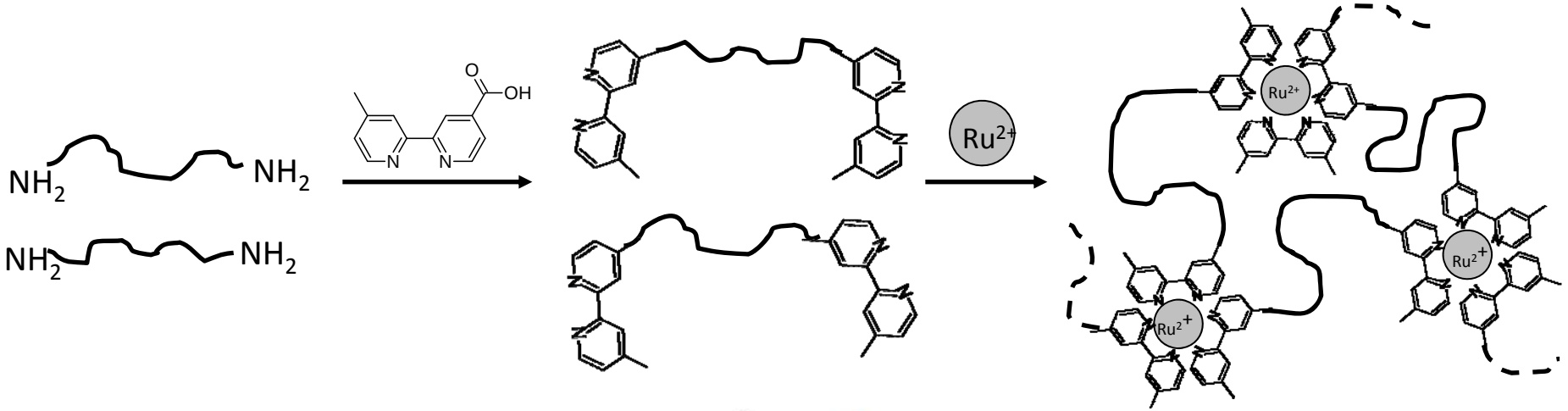
Rubber materials are composed of long-chain (polymer) molecules arranged into continuous networks. Once polymer networks are formed, these materials typically cannot be reshaped by melting or dissolution. We are investigating changes in the chemistry of polymer network formation to make network formation more reversible and to create rubber materials with new characteristics. One of our general synthesis strategies is graphically outlined here.



We've recently been able to make the polymer networks described above. As expected, the network material is dark red in color and more viscous than the parent non-networked polymer molecules. Unfortunately, the material is not quite "rubbery," though further work might allow us to increase the strength of the material.