Isocyanides can be polymerized to poly(iminomethylenes) with NiCl₂ as a catalyst

\[ \text{Ni}^{II} \rightarrow [\text{Ni}-\text{Cl}]_{n} \]

The polymers have a rigid, helical structure with 4 repeating units per turn and a helical periodicity of 0.4 nm. The side chains of the polymers are arranged in 4 stacks parallel to the axis of the helix.

We have prepared a poly(iminomethylene) which contains coronand side chains by polymerizing 4-(1-isocyanoethyl)benzo-18-crown-6 with nickel chloride. The coronands in the polymer form 4 molecular channels (Fig. 1), which strongly bind alkali and ammonium cations. The polymer provides a model for the study of ion transport through molecular channels in biological membranes.

![Fig. 1. Projection along polymer helix axis. The 5th repeating unit is behind the first, the 6th behind the second, etc.](image)