Synthese und Charakterisierung von *cis*- und *trans*-Dicyclohexyl-3,3′,4,4′-tetracarbonsäuren und ihren Dianhydriden

Syntheses and Characterization of *cis*- and *trans*-Dicyclohexyl-3,3′,4,4′-tetracarboxylic Acids and their Dianhydrides

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cis- and *trans*-Dicyclohexyl-3,3′,4,4′-tetracarboxylic acid and their dianhydrides were prepared from tetramethyl dicyclohexyl-3,3′,4,4′-tetra-carboxylates by hydrolysis and subsequent dehydration. The *trans* dianhydride **2b** was found to be sensitive to temperature. However, once the imide ring is formed in the reaction with an amine, the model compound is thermostable. The products were characterized by ^{1}H and ^{13}C NMR, and also by two-dimensional COSY spectroscopy. In the hydrolysis of *cis*-tetramethyl dicyclohexyl-3,3′,4,4′-tetracarboxylates in steam under high-pressure, *trans*-dicyclohexyl-3,3′,4,4′-tetracarboxylic acid was formed, while the treatment of *cis*-dicyclohexyl-3,3′,4,4′-tetracarboxylic acid in steam under high-pressure afforded also *trans*-dicyclohexyl-3,3′,4,4′-tetracarboxylic acid. In a deuterium tracer experiment of *cis*-**1a**, the 3,3′,4,4′-tetradeuterated dicyclohexyl-3,3′,4,4′-tetracarboxylic acid **2a** was formed. An isomerization mechanism was postulated from this findings.