

Learning from diatoms: new synthetic concepts for the formation of highly ordered silica structures at ambient conditions

Initiative: Komplexe Materialien (beendet)

Bewilligung: 30.03.2006

Laufzeit: 3 Jahre

Although silica is by far the most abundant compound in the earth crust, only a minor part, such as sand or clay, can be applied in industry directly or after refining. For most commercial, and specific applications of silica such as filling materials, molecular sieves, catalyst supports, ion-exchange materials, or abrasives, very precisely defined porous structures and surface properties are needed. The silicified cell walls of diatoms are one of the most outstanding examples of nanoscale-structured materials in nature. The observed complexity in these hierarchically organized biomaterials has so far not been reached in artificial materials. In this project, the goal is the hierarchical in vitro formation of ordered silica structures in two and three dimensions under ambient conditions on a fast time scale based on nature's principle of silica-associated components from diatom species that induce silica precipitation.

Projektbeteiligte

Prof. Dr. Claudia Steinem

Universität Göttingen
Faculty of Chemistry
Institute of Organic and Biomolecular Chemistry
Göttingen

Prof. Dr. Armin Geyer

Universität Marburg
Fachbereich Chemie
Marburg

Prof. Dr. Manfred Sumper

Universität Regensburg
NWF III - Biologie und Vorklinische Medizin
Lehrstuhl für Biochemie I
Regensburg