MASTER THESIS / INTERNSHIP

Join the Sustainable and Bio-inspired Materials Department
of the Max Planck Institute of Colloids and Interfaces:

Master Thesis Project/Internship

Chitin chiral self-assembly

Deadline: March 15th

Project description

Chitin nanocrystals (ChNCs) are rod-like nanoparticles made from natural crystalline chitin. When ChNCs made from shrimp shells suspended in water, they can self-organize into a twisted structure known as a cholesteric mesophase. This unique arrangement can be locked in place when the suspension dries to create solid films with a spiral-like periodic nanostructure. We recently showed that if we make ChNCs from fungi (mushrooms) instead of shrimp, they assemble into a cholesteric mesophase with a tighter twist (smaller cholesteric pitch), which we can use to make films with vibrant structural color. The ChNCs from crustacean and fungal sources differ in various ways (e.g. morphology, surface chemistry) but we don't currently understand how these properties affect the mesophase assembly.

Discover our research topic

In this project, you will extract ChNCs from crustacean and fungal chitin, and characterize the nanoparticle properties using techniques widely used in material science such as Transmission electron microscopy, Dynamic light scattering, Optical microscopy, Spectroscopy and FT-IR.

To apply, please submit your CV and a motivation statement outlining your interest in joining our team by mail to:

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