

Cytoskeleton system as an adaptive fiber-strengthened system: Self-assembly, visco-mechanics and modeling of mechanical behavior (extension)

Initiative: Komplexe Materialien (beendet)

Bewilligung: 28.03.2005

Laufzeit: 2 Jahre

The team aims at creating a link between the mechanics of the cyto- skeleton and the micromechanics of fiber-reinforced materials. The properties of metallic, ceramic, and polymeric materials are tailored by embedding various fibers while biological tissues are stabilized by actin filaments. In this project actin networks are self-assembled on newly developed force sensor arrays enabling the measurement of force distribution in surface anchored networks. Major emphasis is put on the self-assembly of passive and active fiber enforced networks through various crosslinkers including myosins, ATP/ADP, and temperature variation. A central aim is the quantitative description of the mechanical behavior of the adaptive biological networks based on micromechanical analysis and simulation.

Projektbeteiligte

Prof. Dr. Eduard Arzt

Max-Planck-Institut für Intelligente
Systeme
Stuttgart

Prof. Dr. Andreas Bausch

Technische Universität München
Fakultät für Physik
Physik-Department E22
Lehrstuhl für Biophysik E27
Garching

Prof. Dr. Joachim Spatz

Universität Heidelberg
Neue Materialien und Biosysteme
Heidelberg