*Neutrons and life science-Poster*

**Magnetic Liposomes and Boron Entrapping for Biomedical Applications - Time-Resolved Neutron Scattering TR-SANS and Electron Microscopy TR-EM**

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Liposomes are biocompatible Nanoparticles covered by a lipid bilayer [1, 2]. Due to the lack of an immunogenic surface they can be used as carrier for drugs, DNA and other material entrapped inside the lumen in cell-biological and medical applications. Typical applications are transport and force experiments at biomembranes. They can be improved, if the liposome can be manipulated by magnetic forces. This requires liposomes exhibiting a macroscopic strong paramagnetic or superparamagnetic moment, i.e. magnetic liposomes. Magnetic liposomes were prepared by a novel method from stabilized iron-complex solutions and biogenic phospholipids using a pH-jump procedure. During preparation Boron compounds were entrapped inside the liposomes. This enables the later application in Neutron capture cancer therapy (10B (n, alpha) 7Li reaction), a local radiation therapy, as well as rheological experiments with magnetic tweezers. The formation of the liposomes and the internal iron oxide structure was observed using time resolved neutron scattering TR-SANS at ILL-D22 and time resolved electron microscopy TR-EM using a stopped-flow mixing device. The lipid, the pH-jump and the entrapping conditions were varied. Under selected conditions, the iron oxide was obtained as homogenous shell beeing located at the inner surface of the lipid layer. Thus the internal volume was free for entrapping of other material, e.g. the Boron compound for Neutron capture applications.

*[1] T. Nawroth; H. Conrad; K. Dose (1989) Physica 156 B, 477-479*

*[2] T. Nawroth; K. Dose; H. Conrad (1989) Physica 156 B, 489-492*