Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Endocytic internalization of nanoparticles into polymeric vesicles. ANJA KROEGER, KARMENA JASKIEWICZ, Max Planck Institute for Polymer Research, ANTJE LARSEN, Department of Materials Science and Technology, University of Crete and F.O.R.T.H., GEORGE FYTAS, Department of Materials Science and Technology, University of Crete and F.O.R.T.H. and Max Planck Institute for Polymer Research — The monitoring of transport through cell membranes is essential for proper functioning of all living organisms. Poorly understood mechanisms of endocytosis have become the focus of intense investigations. Here we present a photon correlation spectroscopy study of the uptake of polystyrene nanoparticles (hydrodynamic radius, R_h=16nm) by poly(dimethylsiloxane)-b-poly(2-methyloxazoline) polymersomes (R_h=150nm) in aqueous solution. The relaxation function C(q,t) for a particle/polymersome mixture with a molar ratio 100:1 at different scattering wave vectors (q) reveal the presence of free and bound particles. Both the experimental form factor P(q) and the effective diffusion coefficient D(q) of the polymersome in the q-range of 0.005-0.033nm^{-1}are consistently described by modeling these q-patterns by a filled polymersome with about 30 particles under the examined conditions. The emerged picture is supported by cryo-TEM imaging.

Anja Kroeger
Max Planck Institute for Polymer Research

Date submitted: 19 Nov 2010 Electronic form version 1.4