

Our Technology
for Your Innovations

Liposome-based Technologies

We offer the tailored development of liposomes and liposome-based (homo- and heterogeneous) assays. Here, liposomes are used as signaling particles with lower detection limits compared to gold nanoparticles and enzymes, as biomimetics, for sample preparation, or as control vesicles. Liposomes, synthetic vesicles consisting of a lipid bilayer that encloses an aqueous cavity, form a flexible platform that allows for tailored liposome characteristics for each application. We carefully design liposomes for example by varying the lipid composition, encapsulated reagents, surface, and size. We can thereby achieve strong signal amplification, biocompatibility, biomimetic properties, controlled release of encapsulants, and long-term storage stability over years.

TRL-Level: 6
Open for R&D Collaboration

Industry



Biotech



Diagnostics



Food



Environmental
monitoring

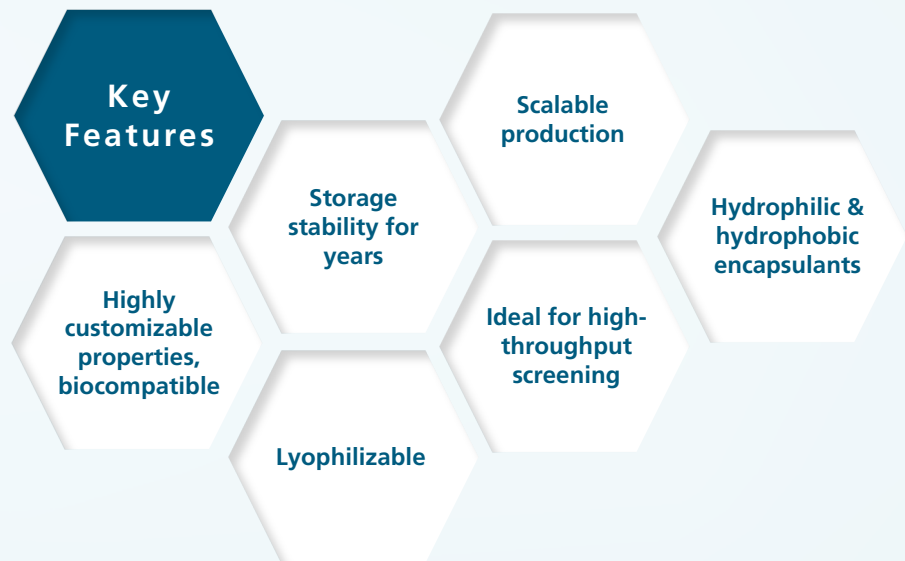
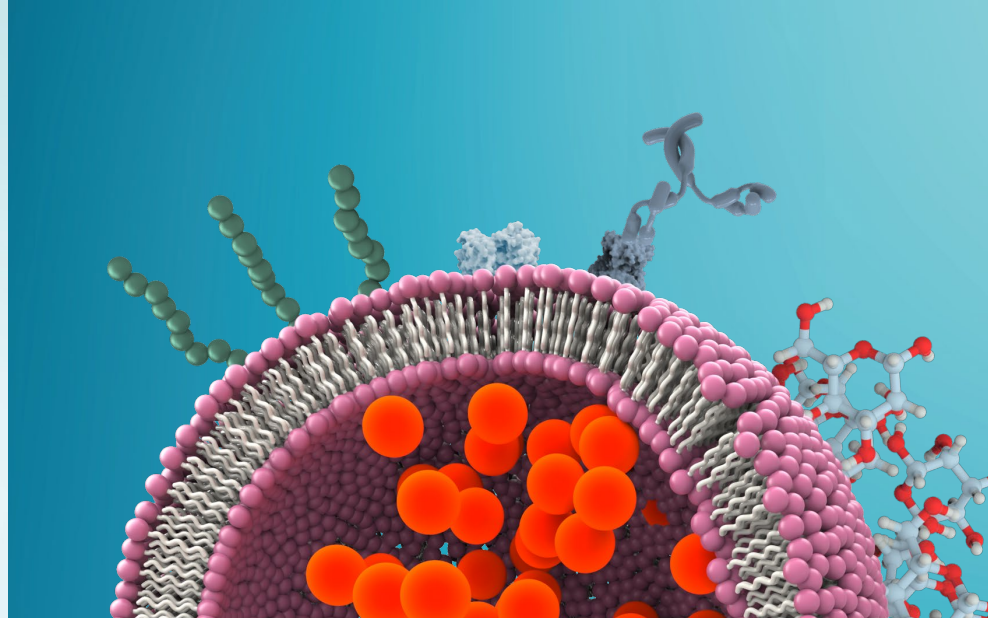


Pharma-
ceuticals

Further information

Streif et al. 2025, *Anal Chem*, 97(36): 19532–19543
Rink et al. 2022, *Anal Bioanal Chem*, 414(10): 3231–3241
Hofmann et al. 2019, *Colloids Surf B: Biointerfaces*, 181: 325–332
Edwards et al. 2006, *Talanta*, 68(5): 1421–1431

www.izi-bb.fraunhofer.de



Applications

Development of liposomes and liposome-based assays (homo- and heterogeneous) with the aim:

Signal amplification

- Bio/immune/DNA assays
- As signaling particle allowing for signal amplification through high loads of entrapped signaling molecules
- In lateral flow assays as versatile capture and signaling particle. Allowing for colorimetric, fluorescent, chemiluminescent or multicolored readouts.

Biomimetic, sample preparation or control reagent

- As biomimetic of biological vesicles, e.g. for pathogens enabling the readout of the complement system's
- As vanishing capture surface, e.g. for nucleic acid isolation through electrostatic interaction
- As control vesicle for biological vesicles, e.g. extracellular vesicles



Contact

Dr. Clemens Spitzenberg
Liposome-based technologies
Tel. +49 941 943-4016
clemens.spitzenberg@izi-bb.fraunhofer.de

