Ph.D. Project Number	**12**
in Project cluster	Drug Delivery and Biological Barriers
Supervisors + Affiliations	**Prof. Dr. Marc Schneider** UdS Saarbrücken, Department of Pharmacy, Biopharmaceutics and Pharmaceutical Technology www.uni-saarland.de/schneider **Jun.Prof. Dr. Sangeun Lee** UdS Saarbrücken, Department of Pharmacy, Pharmaceutical Materials and Processing www.uni-saarland.de/fakultaet/nt/profs-gruppen/professuren/pharmazie/jun-prof-dr-sangeun-lee.html
Description research focus/environment	The research focus of Prof. Schneider's group at Saarland University is formulation development and advanced physicochemical characterization of micro- and nanomedicines. The drug carrier systems are adapted for application to enhance their efficacy. Jun. -Prof. Lee's group is working on novel polymeric materials for developing functional nanomedicine. The group is designing and synthesizing an infection-responsive system for a controlled drug release from the developed nanomedicine.
Project title	Bacterial biofilm targeting with elasticity-controlled nanoparticles.
Short description Ph.D. project	Doctoral candidate (DC) 12 will investigate how the physicochemical properties (in particular, effect of elasticity) of nanoparticles affect the efficacy of biofilm penetration and efficacy of delivered anti-infectives. Polymeric and lipidic carrier systems will be synthesized and produced to be compared in terms of elasticity due to the composition. Those systems will then also be evaluated in biofilm models and native biofilm (inter alia with DC 2). For specific targeting of the drug delivery systems, lectin-based approaches will be used. Specific binding to bacteria, unspecific binding to biofilms and the effect of elasticity on delivery efficacy will be investigated. The DC will learn nanoparticle preparation and characterization methods (especially elasticity measurements using scanning probe microscopy), biofilm assays and advanced imaging microscopy.
Secondment	The secondment at MyBiotech GmbH will provide hands-on training in possibilities to transfer nanoparticle synthesis and formation to industrial production and scaling.
Required or advantageous skills/competences	MSc (or equivalent) in pharmacy, chemistry, biophysics life science or neighboring subjects. Open-minded and positive person motivated to work in a multidisciplinary team. Excellent writing and communication skills in English.
Career perspectives	Scientific career in biomedical or pharmaceutical area in academia or industry
Contact mail for scientific questions regarding the Ph.D. project	Marc.Schneider@uni-saarland.de Sangeun.Lee@uni-saarland.de