Science and Engineering Research Program
Project Description

Institute: Institute of Multiphase Processes

Project title: Surface modification of cochlear implant electrodes

Project description: Cochlear implants are used to treat deafness and profound hearing loss. A silicone electrode array with embedded platinum electrodes is inserted into the cochlea to stimulate the auditory nerve. After implantation, a sheath of connective tissue forms around the electrode array. This results in increased impedance to stimulation of the auditory nerve, unpredictable stimulus propagation and increased energy requirements of the cochlear implant. One way to reduce the growth of connective tissue is to microstructure the electrode surface. By applying hydrophobic materials such as silicone, the adhesion and growth of fibroblasts can be inhibited. The electrospinning process can be used to modify the surface of the electrodes by depositing polymer fibres in the micro- and nanometre range. The student involved in this project will work on parameter studies for the electrospinning of silicone and on the characterisation of the fibre mats produced.

Required skills: laboratory work, statistical analysis.

Contact/supervisor: drexler@imp.uni-hannover.de, M.Sc. Jan Drexler/ Prof. Prof. h.c. Dr.-Ing. Birgit Glasmacher, M.Sc.