Dr. Willenbacher received his diploma degree in Physics and his PhD from the University of Mainz. After his dissertation at the Max-Planck-Institute for Polymer Research in Mainz he joined BASF SE, working there as a research associate in the fields of rheology of complex fluids and adhesion of soft polymers for 15 years. His current research interests are:

- Rheology and microstructure of colloidal suspensions, emulsions, surfactant solutions and foams, stability and flow-induced aggregation of colloidal suspensions
- Rheological analysis and characterization of industrial coating processes
- Optical microrheology, high frequency mechanical rheology and ultrasonic spectroscopy, extensional rheology
- Molecular principles of polymer adhesion, pressure sensitive adhesives from renewable resources
- Formulation and design of innovative products based on capillary suspensions, including pastes for battery electrodes, metal pastes for printed electronic devices, e.g. solar cells, porous membranes

Prof. Willenbacher is president of the German Society of Rheology and assigned member of the ProcessNet Technical Committee on Rheology. He is section editor of Current Opinion in Colloid and Interface Science and member of the Editorial Board of Rheologica Acta.

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**Capillary Suspensions - a Generic Paste Formulation Concept**

Capillary suspensions are three-phase fluids comprising a solid and two immiscible liquid phases. Addition of a small fraction of the secondary liquid phase to a suspension of particles dispersed in the so-called primary or bulk phase leads to the formation of a strong sample spanning particle network, even at low particle loadings. This particle network gains its strength from the capillary forces inferred from the added secondary liquid no matter whether it wets the particles better or worse than the primary liquid. This attractive force is typically orders of magnitude stronger than the ubiquitous van der Waals attraction. Accordingly, capillary suspensions exhibit a paste-like texture and a strongly shear thinning flow behavior. They are highly resistant to sedimentation and flow properties can be tuned in a wide range according to different processing or application demands. A broad range of innovative products including novel food formulations, such as heat stable and low calorie chocolate spreads, or pastes for printed electronics, e.g. lithium-ion battery electrodes or front side metallization of solar cells with unique shape accuracy and surface uniformity have been developed. Beyond that capillary suspensions can be utilized as precursors for highly porous sintering materials to be used as light weight construction materials, filters or membranes.