

KOLLOQUIUM ÜBER NEUERE ARBEITEN AUF DEM GEBIETE
DER MECHANIK UND STRÖMUNGSLEHRE
an der Technischen Universität Wien

EINLADUNG

zum Vortrag von Herrn

Univ.-Prof. Dr.-Ing. habil. Günter BRENN

Technische Universität Graz

Institutsvorstand des Instituts Strömungslehre und Wärmeübertragung

über

**“The dynamics of binary liquid drop collisions -
basics and applications”**

Zeit: Donnerstag, 09. Dezember 2010, 16 Uhr c.t.

Ort: SEM 322

Institut für Strömungsmechanik und Wärmeübertragung

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“The dynamics of binary liquid drop collisions - basics and applications”

Univ.-Prof. Dr.-Ing. habil. Günter BRENN

Collisions of liquid drops are an elementary process in two-phase flows with a disperse liquid phase in a gaseous ambient medium. Drop collisions are particularly frequent in dense sprays with high relative velocities between the droplets. The collisions (may) influence the size spectra of the sprays, together with the drop velocities, and, therefore, the transport processes between the liquid and the gaseous phases.

This seminar talk gives an overview of the processes observed in the mechanical interaction of pairs of liquid drops during collisions. We discuss in detail the case of collisions of drops of different, immiscible liquids. The aim is to find scaling laws for predicting the onset conditions of unstable mechanisms, such as separation of the drops after the collision. This investigation is useful in view of the fact that colliding drops may serve as micro-reactors to produce encapsulated states, e.g., of an aqueous drop inside an oil shell. For this application, we investigate the parameters influencing the stability of the collisions and, for unstable collisions, the thickness of the shell. An application of such kinds of binary drop collisions may be the production of dry emulsions or the encapsulation of thermally or mechanically delicate products.