

## Topic: Concentration Spaces

Two and more-dimensional concentration spaces can be addressed easily by flow-rate controlled segment formation in micro-fluid segment sequences. They are of interest for kinetic investigations in chemistry, for improvement of synthesis protocols, for optimization of reaction conditions, for enhancement of yields and selectivity as well as for microecological, microtoxicological and biomedical research.

The exact stepwise variation of concentrations is based on the transfer of a continuous change of flow rate ratios into the release of discrete portions of liquid into well-defined volumes during the generation of segments on an injector side. Combinations of micro mixers and injectors or double twin injector devices can be applied for generation of segment series with constant segment size but shifting concentrations.

The technique can be applied for complete coverage of two-dimensional or three-dimensional concentration spaces. Still higher dimensionalities are possible. A non-invasive control of segment-internal concentrations can be realized by micro photometry or microfluorometry.

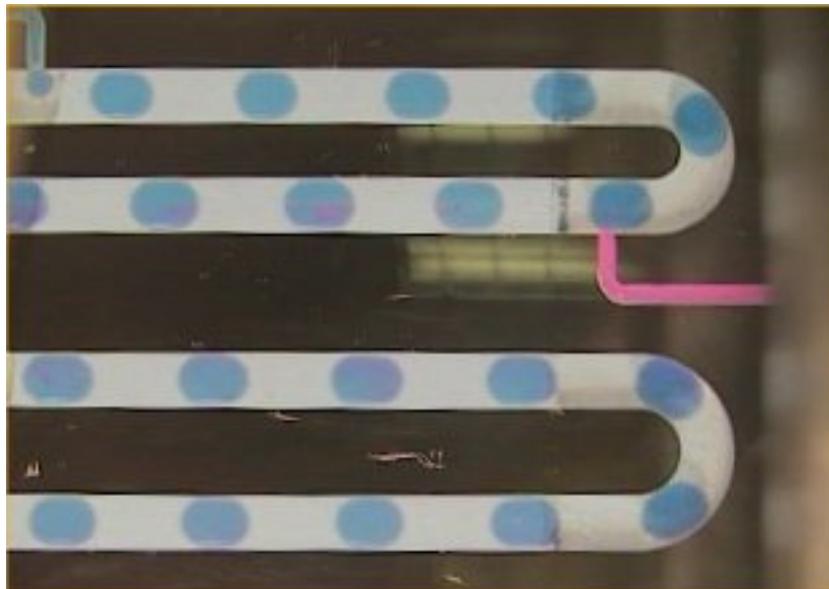


Figure: injector chip (from IPHT Jena) for the generation of micro segments and concentration gradations inside the segments

### Source/Author/Date:

Technische Universität Ilmenau, Fakultät für Mathematik und Naturwissenschaften, Institut für Physik, Fachgebiet Physikalische Chemie / Mikroreaktionstechnik, August 2009