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University of Ljubljana Faculty of Chemistry and Chemical Technology

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VABILO NA PREDAVANJE
V OKVIRU DOKTORSKEGA ŠTUDIJA
KEMIJSKE ZNANOSTI

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Korea Institute of Science and Technology (KIST),
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z naslovom:

Analysis within microstructured devices

v sredo, 20. maja 2015 ob 15:00 uri
v predavalnici 1 v 1. nadstropju Fakultete
za kemijo in kemijsko tehnologijo, Večna pot 113

Vljudno vabljeni!

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Abstract

Scaling laws have long dominated the engineering areas, particularly before the arrival of computers. Who doesn't know, for example, the Reynolds Number? During the 1970s and 80s it was Microfluidics to evolve from clean room and photolithography. First examples were ink-jet printer related. For applications in chemistry, the discipline has been dubbed "lab on chip", probably in the hope that every step in the chemical analysis process can be integrated onto microchips. This is only partially achieved to-date. Instead, the focus of microfluidics has moved more towards cell biology.

Analytical chemistry is benefiting most from the lab on chip concept and miniaturization, because just information is sought. A known chemical experiment, scaled down linearly by a factor of 10 should show identical quality of analytical information but in 1/100 of the time. Furthermore, parallel processing can be done much more easily at a small scale. This has been widely demonstrated for chemical reactions (labeling, bioassays) and for separations (electrophoresis, chromatography).

Last but not least, one might wonder why chip technology needs expensive clean rooms for manufacturing. Nature doesn't have this, and is still fairly successful in the "fabrication" of millimeter to micrometer structures, like insects or plant leaves. Therefore, the talk will also cover some aspects of a future use of self-assembly for our purpose.

The talk will give some older, and some recent examples for scaling laws, microfluidics and self-assembly of simple structures.