

# The 4th International Workshop on Advanced Design Concepts and Practice (ADCP2014)<sup>1</sup>

**Abstract:** The ADCP (Advanced Design Concepts and Practice) series workshop is an important part of an International collaboration Innovation team project sponsored by Tsinghua University and another two grants including National Natural Science Foundation of China (51175284) and the Ministry of Science and Technology of the People's Republic of China (2011ZX02403). The team involves professors from TU Delft, University of Stuttgart, Politecnico di Milano, Dublin City University, University College London, Tel-Aviv University, University of South Carolina and other universities in Europe and USA.

The ADCP workshops have been held in Beijing on July 6-8th of 2011, in Karlsruhe, Germany, on May 8th of 2012. ADCP Summer workshops have been held at Tsinghua University on August 16th 2013 and on June 24th 2014. ADCP web Conferences also were organized at TU Delft on August 17th, in Beijing on November 8th and on March 28th 2014. ADCP 2014 workshop will be held in Stuttgart, Germany, 26th September 2014, as one part of INFORMATIK 2014 - Big Data 44, Annual Meeting of the German Informatics Society in Cooperation with the research group of the German Informatics Society on "Graphics in design and Engineering - GI GRIB".

The ADCP project is now three years on its way. It is time to formulate our ambitions and the project outcome in more detail.

One of the aims is to deliver a design system that allows the development, re-use and extension of parametric models of the processing chambers. These models can be subsequently analyzed in a multi-physics code to help the designer to find theoretically feasible and maybe optimal values for the characteristic parameters of the design and processing parameters.

The system could consist of a dedicated user interface for the designer, a KBE code generation part, a multi-physics toolbox, an optimization toolbox, a postprocessor translating the analysis results into an evaluation of the systems performance in values and units understandable by the designer, a 3D printing module, an experimental set-up (usable for different shower head topologies) and any other module necessary to support the designers.

The system development is based on a number of unique design theories closely interacting with recent developments in mathematics and based on innovative developments in computer science. The theories can be tested with the design system.

Our contributions could/should be technically oriented but we could also help the project by motivating students to get on board and go beyond analysis using existing tools. Sketching a bigger picture of our ideas and showing that the application to the chamber design is just an example could help to get more students joining the team. The workshop is another opportunity to do this.

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<sup>1</sup> <http://adcp2012.com/ADCP2014.html>

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**Co-Chairs:** Professor Michel van Tooren (Delft University of Technology), Professor Ji Linhong (Tsinghua University)

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