

## INFLUS (ACTIVE FLUID CONTROL BY FUNCTIONALISED MATERIAL INTERFACE OF COMPLEX GEOMETRY MICROCHANNELS)

### PROJECT LEADERS

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### RESEARCH THEME

Complex dynamics of fluids

### PARTICIPANTS

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### COOPERATIONS

INFLUS Project (EU)

### FUNDED

EU

1<sup>st</sup> 50% 2<sup>nd</sup> - 3<sup>rd</sup> 50%

### START OF THE PROJECT

2007

### INFORMATION

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### PROJECT AIM

In this project we build a micro Particle Image Velocimetry system for the investigation of the flow in the vicinity of the wall. A volume of a few 100 nanometers at the wall will be illuminated by evanescent wave illumination. With this set-up we will be able to investigate the influence of surface properties on the flow. The project will be carried out in strong cooperation with other European project partners, that are mainly numerically investigating surface effects. We will carry out verification experiments and our measurements deliver input for theoretical models.

### PROGRESS

The Nano-Particle Image Velocimetry setup has been established, and a journal manuscript is planned to be submitted in the very near future.

### DISSERTATIONS

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### SCIENTIFIC PUBLICATIONS

1. Dec 2008: G.O.F. Parikesit, R. Lindken, J. Westerweel, "Nano-velocimetry for flows near nano-structured surfaces" (with lecture presentation), Proceedings of "The 1st European Conference on Microfluidics", Bologna, Italy.
2. Nov 2008: G.O.F. Parikesit, R. Lindken, J. Westerweel, "Nano-PIV for flows near nano-structured surfaces" (with lecture presentation), Bulletin of the American Physical Society, "The 61st Annual Meeting of the Division of Fluid Dynamics", Vol. 53, No. 15, page 26, 2008 (ISSN: 0003-0503), San Antonio, USA.
3. Jul 2008: G.O.F. Parikesit, S. Girardo, D. Pisignano, R. Lindken, J. Westerweel, "Modulated evanescent-wave illumination in particle velocimetry near nano-structured surfaces" (with lecture presentation), Proceedings of "The 14th International Symposium on Applications of Laser Techniques to Fluid Mechanics", Lisbon, Portugal.
4. Jun 2008: G.O.F. Parikesit, "Fluorescence Measurements", in Encyclopedia of Microfluidics and Nanofluidics (editor: Dongqing Li), page 731-737, 2008 (ISBN: 978-0-387-32468-5 [Print]; 978-0-387-48998-8 [Online]).
5. May 2008: G.O.F. Parikesit, A.P. Markesteijn, O.M. Piciu, A. Bossche, J. Westerweel, I.T. Young, Y. Garini, "Size-dependent trajectories of DNA macromolecules due to insulative dielectrophoresis in submicrometer-deep fluidic channels", Biomicrofluidics, 2008, Volume 2, Issue 2, paper 024103 (14 pages), Free PDF Access, DOI: 10.1063/1.2930817(ISSN: 1932-1058).
6. Jan 2008: G.O.F. Parikesit, R. Lindken, J. Westerweel, "Modulated evanescent-wave velocimetry near nano-structured surfaces" (with poster presentation), "Burgers Day 2008" symposium, JM Burgers Center for Fluid Mechanics (JMBC), Delft, The Netherlands.
7. Jan 2008: G.O.F. Parikesit, A.P. Markesteijn, O.M. Piciu, V.G. Kutchoukov, J. Westerweel, A. Bossche, Y. Garini, I.T. Young, "Free-Flow Dielectrophoresis" (with poster presentation), Book of Abstracts of the "Physics @ Veldhoven" meeting, Fundamenteel Onderzoek der Materie (FOM), Veldhoven, The Netherlands.