



## Mechanik-Seminar

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Referent: **Prof. Dr. Ahmad A. AL-QAISIA**  
ME Dept., Faculty of Engineering, University of Jordan, Jordanien

Thema: **"Dynamic Performance of a Valveless Micropump"**

Datum: Donnerstag, 02.07.2009  
Uhrzeit: 15:45 Uhr  
Ort: Geb. 10.23, 1. OG, SR 1

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**Abstract:** The assessment of dynamic performance of Micro-fluid handling devices have in recent years become a major area of research because of very promising technical and commercial potentials of using these devices in the medical as well as in other fields. Advances of micro-electromechanical systems (MEMS) manufacturing technology in recent years have enabled the design and fabrication of a variety of miniaturized fluid delivery devices to be used, for example, in a controlled drug delivery process. The practical use of such devices involves the design of a controller which requires a good understanding of the device dynamic behavior over a range of operating conditions.

The presentation will include:

1. Mathematical modeling of a valveless micro-pump
2. Inclusion of fluid-structure interaction
3. Inclusion of geometric nonlinearity (mid-plane stretching)
4. Discretization of the partial differential equation
5. Single mode approach (nonlinear differential equation)
6. Dynamic behavior and performance
7. Effect of micro-pump physical parameters on Volumetric Flow Rate

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**Alle Interessenten sind herzlich eingeladen.**

Prof. Dr.-Ing. Carsten Proppe / Prof. Dr.-Ing. Wolfgang Seemann