

MICHAEL R. WARTMANN

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Education

- **Ph.D. in Chemical Engineering** **Sep 2006 - present**
Advised by B. Erik Ydstie
Topic: Decentralized optimization and control of complex process networks, Total GPA 4.0/4.0
Department of Chemical Engineering, College of Engineering, Carnegie Mellon University
 - **M.S. (hons) in Chemical Engineering** **Oct 2000 – Nov 2005**
Master thesis advised by Goetz Vesper and Gerhart Eigenberger
Master thesis title: Methane Oxidation in Catalytic Microchannels, Total GPA 3.8/4.0
Fakultät Verfahrenstechnik, Universität Stuttgart, Germany
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Research Experience

- **Carnegie Mellon University – Department of Chemical Engineering,** **Sep 2006 – present**
PhD Research
Research: Process systems, network theory, passivity-based control, irreversible thermodynamics, decentralized control and optimization, agent systems, supply chains, offshore oil production optimization (collaboration, *Center for Integrated Operations*, NTNU, Norway).
 - **University of Pittsburgh – Department of Chemical Engineering,** **Mar 2005 – Oct 2005**
Master Thesis Research
Project: Methane oxidation in catalytic microchannels: Investigation of ignition behavior in microchannels through simulations with a 2D-boundary-layer model including detailed surface and homogeneous chemistry.
 - **Universität Stuttgart – Institute of Thermodynamics** **Nov 2003 – May 2004**
Thesis Research, EU-project CASTOR
Project: Reactive CO₂-absorption in alkanolamine solutions. Online-NMR experiments, modeling and simulation of phase equilibria of electrolyte solutions for CO₂ removal from coal power plant emissions.
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Industrial Experience

- **BASF AG – Engineering R&D Department, Ludwigshafen, Germany** **Sep 2004 – Feb 2005**
Internship: EU-project INSERT
Project: Dynamic experiments and investigation of control concepts for the transesterification of methyl to butyl acetate in a dividing wall column.
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Teaching Experience

- **Carnegie Mellon University, Dep. of Chemical Engineering** **Jan 2007 – present**
Process Control and Thermodynamics, Teaching Assistant
 - **Comprehensive School Palo Alto, Santiago de Chile, Chile** **Mar 2006 – Jun 2006**
Teaching (English, mathematics, computer class) and project organization
 - **Universität Stuttgart – Institute of Thermodynamics** **Jun 2004 – Aug 2004**
Molecular Thermodynamics, Undergrad. Teaching Assistant
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Awards and Honors

- NSF grant for the PASI 2008 workshop for Process Systems Engineering, Mar del Plata, Argentina (2008)
- Fellowship and PhD project funding, Integrated Operations Center, NTNU, Norway (2007)
- Graduate student fellowship, Dep. of Chemical Engineering, Carnegie Mellon University (2006)
- Award for excellent achievements in M.S. studies, Universität Stuttgart (2005)
- Solvay fellowship for master thesis in the USA (2005)
- Fellowship of the German Acad. Exchange Service (DAAD) for master thesis in the USA (2005, *declined*)
- E-fellows scholarship (2001- present)
- Valedictorian, High School Neckartenzlingen, Germany (1999)
- Award, outstanding achievements in high school chemistry, German Chem. Industry Association (1999)

Scientific and Professional Societies

- Association of German Engineers - VDI
- E-fellows Career Network
- German Academic International Network – GAIN
- German Scholars Organization – GSO
- American Institute of Chemical Engineering – AIChE
- Sigma Xi, Scientific Research Society

Publications and Presentations

Wartmann, M.R., Gunnerud, V., Foss, B.A., Ydstie, B.E., "Distributed Optimization and Control of Offshore Oil Production: The Intelligent Platform", Proceedings of FOCAPO 2008, Cambridge, USA, Jul 2008.

Wartmann, M.R., Ydstie, B.E., "Optimality of Integrated Process Networks", Proceedings of the American Control Conference 2008, Seattle, USA, Jun 2008.

Ydstie, B.E., Jillson, K.R., Dozal, E.J., Wartmann, M.R., "New Vistas for Process Control: Integrating Physics and Communication Networks", Presented at the Annual Meeting of the AIChE, Salt Lake City, Nov 2007.

Wartmann, M.R., Ydstie, B.E., "Optimality of Integrated Process and Financial Networks", Presented at the 3rd Int. Conference on Integrated Operations in the Petroleum Industry, Trondheim, Norway, Sep 2007.

Wartmann, M.R., Ydstie, B.E. "Network Based Analysis of Decision Making in Complex Organizations: The Adaptive Enterprise", Presented at ICCOPT 2/MOPTA 07, Hamilton, Canada, Aug 2007.

Wartmann, M.R., Vesper, G., "Detailed Simulations of Catalytic and Non-Catalytic Ignition during CH₄-Oxidation in a Microchannel Reactor." (*manuscript in preparation for AIChE Journal*)

Wartmann, M.R., Vesper, G., "Size-effects on NO_x formation in catalytic and non-catalytic methane combustion in microchannel reactors" (*manuscript in preparation for Chemical Communications*)

Chattopadhyay, S.; Barillas, M.K., Wartmann, M.R., Vesper, G. "Heterogeneous-Homogeneous Interactions in Catalytic Micro-channel Reactors", ACHEMA 2006, Frankfurt, Germany, May, 2006.

Wartmann, M.R., "High-Temperature Methane Oxidation in Catalytic Microchannels", Thesis and departmental seminar, Institute of Chemical Reaction Engineering, Univ. Stuttgart, Germany, in collaboration with Univ. of Pittsburgh, Pittsburgh, USA, Oct 2005.

Extracurricular Activities

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| • CMU Tennis Club, Executive Board: | President
Treasurer | 2008 – present
2006 – 2008 |
| • CMU Graduate Student Assembly (GSA): | CHEGSA Representative | 2007 – present |
| • Chem. Eng. Grad. Student Assoc. (CHEGSA): | Social Chair | 2006 – 2007 |
| • Tennis Club Zuffenhausen, Executive Board:
Stuttgart, Germany | PR Manager and Webmaster
Men's team, Player and Captain,
State-wide competition | 2003 – 2006 |
| • Tennis Club Nuertingen, Germany: | Junior's team, Player and Captain,
State-wide competition | 1996 – 1999 |

References available upon request