

Prof. Dr. Tobias Fieback

Curriculum Vitae



Personal Data

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| Surname: | Fieback | Date of birth: | 12 th March 1979 |
| Given Names: | Tobias Michael | Place of birth: | Witten, Germany |

Contact Details

Department: Ruhr-University Bochum,
Department of Mechanical Engineering
Chair for Experimental Thermodynamics in Process Technology

Position: Ass. Professor

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Fakultät für Maschinenbau
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D-44801 Bochum

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Career

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|-------------------|--|
| since 08/2012 | Ruhr-University Bochum, Department of Mechanical Engineering, Chair for Experimental Thermodynamics in Process Technology, ass. Professor |
| 02/2009 – 08/2012 | Ruhr-University Bochum, Department of Mechanical Engineering, Chair for Thermodynamics Head of Research group: Property Data for Process Engineering |
| 04/2007 – 01/2009 | Ruhr-University Bochum, Chair for Process Technology, Research Assistant |
| 01/2006 – 03/2007 | Fraunhofer Institut UMSICHT, Oberhausen, Research Assistant |
| 08/2005 – 12/2005 | Ruhr-University Bochum, Chair for Particle Design and Particle Technology, Research Assistant |

Education

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|------------------------------------|---|-----------------|-----------------|-------------------------|-----------------|------------------------------------|-----------------|---------------------------|-----------------|
| 08/2005 – 01/2009 | <p>Conferral of doctorate Ruhr-University Bochum, Chair for Process Technology</p> <p>Title of Dissertation: „Entwicklung und Aufbau einer universellen Apparatur zur Messung der selektiven Sorption von gasförmigen und überkritischen Gemischen in festen und flüssigen Sorbentien“</p> <p>Grade: Magna cum laude</p> | | | | | | | | |
| 08/2004 – 12/2004 | <p>Semester abroad Texas A&M University, Department of Mechanical Engineering Major: Process Technologies</p> <p>4 courses accepted for studies at Ruhr-University Bochum:</p> <table> <tr> <td>Fluid dynamics:</td> <td>very good (1.0)</td> </tr> <tr> <td>Heat and mass transfer:</td> <td>very good (1.0)</td> </tr> <tr> <td>Aerothermodynamics and propulsion:</td> <td>very good (1.0)</td> </tr> <tr> <td>Student research project:</td> <td>very good (1.0)</td> </tr> </table> | Fluid dynamics: | very good (1.0) | Heat and mass transfer: | very good (1.0) | Aerothermodynamics and propulsion: | very good (1.0) | Student research project: | very good (1.0) |
| Fluid dynamics: | very good (1.0) | | | | | | | | |
| Heat and mass transfer: | very good (1.0) | | | | | | | | |
| Aerothermodynamics and propulsion: | very good (1.0) | | | | | | | | |
| Student research project: | very good (1.0) | | | | | | | | |
| 10/2001 – 07/2005 | <p>Diploma Ruhr-University Bochum, Department of Mechanical engineering Major: Process Technologies</p> <p>Duration: 7.2 Semester Overall grade: „Passed with Distinction“ (1,2)</p> | | | | | | | | |
| 10/1998 – 08/2001 | <p>Partial intermediate diploma Ruhr-University Bochum, Department of Chemistry and Biochemistry</p> | | | | | | | | |
| 1989 – 1998 | <p>General qualification for university entrance Willy Brandt-Gesamtschule Bochum</p> | | | | | | | | |
| 1985 – 1989 | <p>Primary school Waldschule Bochum</p> | | | | | | | | |

Academic awards

- 2009 **Rubitec-Transferpreis 2008**
for the best transfer of knowledge from the Ruhr-University Bochum to private sector business in 2008.
For my dissertation thesis „Entwicklung und Aufbau einer universellen Apparatur zur Messung der selektiven Sorption von gasförmigen und überkritischen Gemischen in festen und flüssigen Sorbentien“
- 2007 **Scholarship**
Prof. Dr. Zerweck-/Cassella-Stiftung 2007
- 2006 **Adam Opel Preis 2006**
for outstanding achievements in Mechanical Engineering studies at the Ruhr-University Bochum
- 2004 **Scholarship**
Scholarship for semester abroad from DAAD (German Academic Exchange Service) 2004
- 1998 **Abiturpreis des Fonds der Chemischen Industrie**
for the best university-entrance diploma in chemistry at Willy Brandt-Gesamtschule in 1998

Social activities

- since 03/2010 Head of Public Relations Division, Witten Fire Brigade
- since 10/2009 Head of the Witten-Heven Volunteer Fire Brigade
- since 03/2007 Member of the Volunteer Fire Brigade in Witten
- 08/1998 – 02/2007 Member of the Volunteer Fire Brigade in Bochum

Teaching experience

- since WS/09 Lectureship for compulsory lecture „Process Thermodynamics“ in Bachelor course „Sales Engineering and Product Management“
- since WS/09 Reviewer for seminar, student research and final theses
- since SS/06 Tutor for seminar, student research and final theses
- SS/09-WS/09 Teaching assistant for tutorials in “Process Thermodynamics”
- WS/05-SS/08 Teaching assistant for tutorials in “Thermodynamics” and “Process Thermodynamics”

Current main research fields

- Optimization of renewable resources and organic waste gasification processes
 - Determination of burn-off loss and gasification rates
 - Determination of pyrolysis gas composition
 - Catalytic cleaning of pyrolysis gas
- Sorption technology
 - Gravimetric measurement of gas/solid-equilibria from vacuum to 40 MPa with pure gases, binary mixtures and multi-component mixtures
 - Purification and storage of biogenic gases
 - Hydrogen storage on zeolithes
 - Sorption of bio gas components in ionic liquids
 - CO₂-separation from natural and bio gases
 - Sorption isotherms with toxic und corrosive media
 - Combined sorption and swelling measurements in liquids (particularly ionic liquids)
- Solvation in supercritical flown-through liquids
- High pressure sensor technology (20 MPa - 40 MPa)
 - Adaptation of low pressure concentration measuring systems for high pressure applications
 - Development of in-line IR&UV/VIS high pressure sensors
 - Development of In-Situ high pressure sensors for velocity of sound, heat conductivity and impedance
 - Measurement of thermo physical properties of gas and liquid mixtures in wide pressure ranges
- High temperature sensor technology (800 °C - 1200 °C)
 - Development of in-line IR&UV/VIS high temperature sensors
 - Development of In-Situ high temperature sensors for velocity of sound, heat conductivity and impedance
 - Measurement of thermo physical properties for gas and liquid mixtures in high temperature range

Reviewed publications

| Year | Title | Authors | Journal | Status |
|------|--|--|--|-----------------|
| 2012 | Solubility of gases in 1-alkyl-3methylimidazolium alkyl sulfate ionic liquids: experimental determination and modeling | M. Bermejo, T. Fieback, A. Martin | The Journal of Chemical Thermodynamics | under review |
| 2012 | Multi-Component Adsorption Measurements on Activated Carbons, Zeolite Molecular Sieves and Metal-Organic Frameworks | J. Rother, T.Fieback | Adsorption | submitted |
| 2012 | Characterization of solid and liquid sorbent materials for biogas purification by using a new volumetric screening instrument | J. Rother, T.Fieback, R. Seif F. Dreisbach | Review of Scientific Instruments | In press |
| 2011 | Sorption and swelling measurements of CO ₂ and N ₂ on Baydur polyol for their use as blowing agents in a new PU Foaming Process device | T. Fieback S. Latz W. Michaeli M. Mondejar | Chemical & Engineering Chemistry Research | published |
| 2011 | A new approach for simultaneous measurement of gas absorption and swelling | T. Fieback F. Dreisbach | Chemical & Engineering Chemistry Research | published |
| 2010 | New sorption and solvation measuring methods: Forced flow through liquids and solid state fluidised bed sorbents in high pressure gravimetry | T. Fieback F. Dreisbach M.Petermann R. Span E. Weidner | Fluid Phase Equilib. | published |

Oral presentations

| Date | Event | Title | Authors | Status |
|---------------------------|---|---|--|--------------------|
| 28.10.- 02.11. 2012 | AIChE 2012 | High-Throughput Isotherm Measurements On Functionalized Cr-MIL-101 Structures for Biogas Purification | D. Meister F. Dreisbach A. Puls J. Rother T. Fieback S. Bernt N. Stock | accepted |
| 16.-19.09. 2012 | MOF2012 | High pressure gas adsorption studies as a high throughput experiment on functionalized Cr-MIL-101 structures | A. Puls J. Rother T. Fieback S. Bernt N. Stock F. Dreisbach R. Seif | Held |
| 20.-23.05. 2012 | PBASt-6 Taiwan | Characterization of Solid and Liquid Sorbent Materials for Bio Gas Cleaning Applications | T. Fieback J. Rother F. Dreisbach | Held |
| 29.03. 2012 | Open house, department of mechanical engineering, RUB | Wat sind denn dat für Zustände hier?! Eine Einführung in die thermodynamischen Eigenschaften fluider Stoffe | T. Fieback | Invited lecture |

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| 07.-09.03. 2012 | ProcessNet Adsorption | Characterization of Solid and Liquid Sorbent Materials for Biogas Purification | T. Fieback J. Rother F. Dreisbach | Held |
| 29.09. 2011 | ECCE 2011 | Design of enhanced carbon dioxide absorption process using immobilised amines | Y. Algayer M. Grünewald T. Fieback U. Kunz | Held |
| 26.09. 2011 | ECCE 2011 | Temperature dependent immobilization of CH ₄ and N ₂ in narrow pore zeolites for energy storage processes | T. Fieback F. Dreisbach | Held |
| 3.-20.7. 2011 | High Pressure Intensive Course 2011, Belgrade | High Pressure Gravimetry | T. Fieback | Invited lecture |
| 5.-8.06. 2011 | Aiche 2011 | New Multi-Sampe Volumetric Instrument for High Throughput Adsorption Measurements | F. Dreisbach D. Meister R. Seif J. Rother T. Fieback | Held |
| 08.06. 2011 | IX COPS 2011 | Temperature dependent immobilization of CH ₄ and N ₂ in narrow pore zeolites for energy storage processes | F. Dreisbach T. Fieback | Held |
| 24.-25.03. 2011 | ProcessNet Adsorption | Gravimetrisches Analysegerät für die Messung selektiver Sorption von gasförmigen oder überkritischen Mischungen in zwangsdurchströmten Festbetten und Wirbelschichten | T. Fieback R. Seif | Held |
| 24.-25.03. 2011 | ProcessNet Adsorption | Schnellere Charakterisierung von Adsorbentien mit Hilfe einer neuartigen, volumetrischen Multiprobenapparatur | J. Rother T. Fieback R. Seif | Held |
| 10.-11.03. 2011 | ProcessNet HDVT | Entwicklung einer Gas- und Dampfdozierstationen zur Generierung komplexer Gemische in einem weiten Druck- und Temperaturbereich | J. Südmeyer T. Fieback M. Petermann R. Span H.W. Lösch F. Dreisbach | Held |
| 06.10. 2010 | Thermo- dynamik- Kolloquium | Gravimetrisches Analysegerät für die Messung selektiver Sorption von gasförmigen oder überkritischen Mischungen in Flüssigkeiten und Wirbelschichten | T. Fieback F. Dreisbach R. Span | Held |
| 03.07. 2010 | GERG- Academic Network | Gravimetric Analyser for Selective Sorption Measurement of Multi-Component Gas or Supercritical Mixtures in Fluidised-Bed or Liquid Sorbents | T. Fieback R. Span M. Petermann | Held |
| 05.03. 2010 | ProcessNet Fluid VT - HDVT | Gravimetrisches Analysegerät für die Messung selektiver Sorption von gasförmigen oder überkritischen Mischungen in Flüssigkeiten und Wirbelschichten | T. Fieback F. Dreisbach | Held |

Conference committees

| Date | Event | Role |
|------------------|--|---|
| 1.-2.03. 2012 | ProcessNet - Jahrestreffen der Fachgruppe Hochdruckverfahrenstechnik | Invited member of the „Poster-Award“-Jury |

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| 13.-16.09. 3 rd Int. Conf. Environmental Best 2011 Practices | Invited member of scientific committee |
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Reviewer for scientific journals

since 2010

Fluid Phase Equilibria