

## Subtopic 5.4: Energy-efficient Processes

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### Current positions

Head of Group Transport Processes at Interfaces at Institute of Fluid Dynamics, HZDR  
Professorship at TU Dresden (since 2016)

### Previous positions (two selected)

Group Leader at Institute of Hydrodynamics at TU Dresden (2008-2015)  
Group Leader at Institute of Aerospace Engineering (2005-2008)

### Scientific degrees

PhD in physics at Otto-von-Guericke University Magdeburg (1998)  
Habilitation in Mechanical Engineering at TU Dresden (2011)

### Recent research topics

Flotation, Multiphase Flows, Magnetic separation, Water electrolysis, Marangoni convection

### Awards, honors, memberships

PI of CDIC I and II (ESA 2005 and 2008), Member of Scientific Committees (IMA), Deutsche Phys. Gesellschaft, GAMM

### Publications (5 most important)

- **X. Yang**, D. Baczyzmański, C. Cierpka, **G. Mutschke**, **K. Eckert**, Marangoni convection at electrogenerated hydrogen bubbles, *Physical Chemistry Chemical Physics* 20 (17), 11542 (2018) [doi:10.1039/c8cp01050a](https://doi.org/10.1039/c8cp01050a)
- **Z. Lei**, B. Fritzsche, **K. Eckert**, Evaporation-Assisted Magnetic Separation of Rare-Earth Ions in Aqueous Solutions, *J. Phys. Chem. C* 121, 24576 (2017) [doi:10.1021/acs.jpcc.7b07344](https://doi.org/10.1021/acs.jpcc.7b07344)
- **X. Yang**, F. Karnbach, M. Uhlemann, S. Odenbach, **K. Eckert**, Dynamics of single hydrogen bubbles at a platinum microelectrode, *Langmuir* 31 (29), 8184 (2015) [doi:10.1021/acs.langmuir.5b01825](https://doi.org/10.1021/acs.langmuir.5b01825)
- **K. Schwarzenberger**, T. Köllner, H. Linde, T. Boeck, **K. Eckert**, et al., Pattern formation and mass transfer under stationary solutal Marangoni instability, *Adv. Colloid and Interface Sci.* 206, 344 (2014) [doi:10.1016/j.cis.2013.10.003](https://doi.org/10.1016/j.cis.2013.10.003)
- P.A. Nikrityuk, **K. Eckert**, R. Grundmann, A numerical study of unidirectional solidification of a binary metal alloy under influence of a rotating magnetic field, *Int. J. Heat Mass Transfer* 49, 1501 (2006) [doi:10.1016/j.ijheatmasstransfer.2005.08.035](https://doi.org/10.1016/j.ijheatmasstransfer.2005.08.035)