

Michael Walter

PD Dr.

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Personal information

Birth date 21.9.1967
Nationality German
Family status married, 4 children

Professional addresses

FIT Freiburg Centre for Interactive Materials and Bioinspired Technologies
University of Freiburg
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Scientific CV

Since 02/17 Permanent scientific employee (30%), Fraunhofer Institute for Mechanics of Materials
Since 06/15 Working group leader computational modelling, University of Freiburg, Germany
Since 02/14 Scientific employee, University of Freiburg, Germany
Since 02/13 Scientific employee, Fraunhofer Institute for Mechanics of Materials
15.12.2011 Habilitation in the Institute of Physics, University of Freiburg, Germany
06/08-10/13 Scientific employee, University of Freiburg, Germany
10/06-05/08 Senior postdoc, University of Jyväskylä, Finland
10/03-09/06 Postdoc, University of Jyväskylä, Finland
08/01-09/03 Scientific employee, University of Freiburg, Germany
01/01-07/01 Internet Engineer, Systor AG, Basel, Switzerland
08/00-12/00 Postdoc, University of Freiburg, Germany

- 21.07.2000 **Promotion** (magna cum laude) Dissertation: "Photo(doppel)ionisation von Helium und einfachen Molekülen" (Photo(double)ionization of helium and simple molecules) Supervisor: Prof. Dr. Briggs
- 02/97-07/00 Promotion Physik, University of Freiburg, Germany Promotion is a PhD graduation program.
- 09/90-01/97 Study of Physik Diplom, University of Freiburg, Germany Diplom 21.01.1997 ("sehr gut" = very good) Thesis: "Bestimmung der Gluondichte des Protons am ZEUS-Experiment" Supervisor: Prof. Dr. Bamberger The "Diplom" is a slightly extended Masters degree.
- 07/74-05/87 School up to German Abitur

Funding

- 01/19-12/25 PI in the Excellence Cluster **Living, Adaptive and Energy-autonomous Materials Systems (livMatS)** funded by the Deutsche Forschungsgemeinschaft (DFG), total Funding 38.6 Mio €.
- 11/18-10/21 Project **Force sensing and stress imaging with donor-acceptor torsional springs** funded by DFG, 136 k€
- 08/18-07/21 Project **HYBRIDIS: Dispersion forces in media: A hybrid approach of macroscopic quantum-wlwtrodynamics and density functional theory** funded by DFG, 136 k€
- 05/15-08/19 PI in the International Research Training Group (IRTG 2079) **"Cold Controlled Ensembles in Physics and Chemistry** funded by DFG, total funding 4 Mio €.
- 06/15-11/18 Project **Controlling the force range of polymeric force sensors made from rationally designed mechanochromic copolymer networks** funded by DFG, 130k€.
- Since 2009 Computational grants on national high performance computing platforms in Karlsruhe and Jülich
- 10.-23.9.2006 International Wilhelm and Else Heraeus summerschool: „Few body dynamics in atomic and molecular systems“ organized by Andreas Becker, Reinhard Dörner und Michael Walter

On top of these activities I have been part in several applications in academia and economy inofficially, where in particular the application for a computing platform worth 260k€ has to be highlighted. My current position at FIT (University of Freiburg) is connected to this positively assigned application.

Scientific interests

The center of my research is located in the border region between chemistry and physics. The computer based description of the electronic structure plays the central role in my studies. Topics are molecular properties, molecular interactions with and on surfaces, within functional materials and solids. My group benefits substantially from the density functional theory (and beyond) software GPAW (hosted at DTU), and we actively participate in its development. This allows us to extend our possibilities and to introduce new methods. In particular the advancement and refinement of spectroscopic approaches is of great interest to me. This involves the constant struggle with questions of the many body nature of matter that must be correctly taken into account in order to give a satisfying description of experimental conditions.

I have demonstrated my personal interest on the foundations of quantum mechanics by the inaugural lecture (after Habilitation) „Does God play Dice ?“.

Review activities

Peer reviewed journals: J. Am. Chem. Soc., Phys. Rev. Lett., Ang. Chem. Int. Ed., Phys. Rev. A, Phys. Rev. B, Appl. Phys. Lett., Sc. Rep., J. Chem. Phys., J. Phys. Chem. Lett., J. Phys. Chem. A, Phys. Chem. Chem. Phys., Nanoscale, Particle, J. Cluster Sc., Eur. Phys. J. D, Z. Naturf., Carbon, Comp. Mat. Sc., Hybr. Mat., Int. Rev. Phys. Chem., Coord. Chem. Rev., Nanoscale

Funding agencies: Department of Energy (USA), Research Foundation Flanders (Belgium), Bayerische Forschungsförderung (Germany)

Honorary appointment

In 2014 I was elected as member of the municipal council of our village with nearly 13000 citizens.

References

Prof. Dr. Michael Moseler

University Professor at the Physics Institute of the University of Freiburg

Head of Multiscale Materials Modelling and Tribo Simulation

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Prof. Dr. Michael Sommer

Full Professor (W3) for Polymer Chemistry

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Prof. Dr. Hannu Häkkinen

Academy Professor (2016-2020)

Physics / Chemistry

Nanoscience Center

P.O. Box 35 (YFL)

FIN-40014 University of Jyväskylä, Finland

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Collaborations

Active collaborations within the last five years outside of the University of Freiburg:

Michael Sommer, TU Chemnitz, Germany
Gerhard Kahl, TU Vienna, Austria
Bjørk Hammer, Aarhus, Denmark
Rob Carpick, University of Pennsylvania, USA
Stijn Mertens, University of Lancaster, GB
Steven de Feyter, KU Leuven, Belgium
Elizabeth von Hauff, VU Amsterdam, Netherlands
Taka Momose, UBC Vancouver, Canada
Roman Krems, UBC Vancouver, Canada