

# FUSION “THE ROUTE TO A FUSION POWER PLANT”

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## Current positions

Head of the department “Mechanics of Materials 2”, Institute for Applied Materials – Materials and Biomechanics (IAM-WBM), KIT (since 1996)  
Professor, Department of Mechanical Engineering, KIT (since 2016)

## Previous positions

Research assistant, University of Karlsruhe (1990-1995)

## Scientific degrees

PhD in Engineering, University of Karlsruhe (1994)  
Habilitation, Mechanical Engineering, KIT (2009)

## Recent research topics

Structural integrity of fusion materials: Characterization; modelling; irradiation effects; design data base & rules; nonlinear structure analysis; functionally graded materials for joints and coatings

## Awards, honors, memberships

Full Professorship offer from the German University in Cairo; Egypt (2006)  
6-months Research Fellow at the Johns Hopkins University; USA (2002)  
Scholarship to study in Germany for outstanding high school graduation (1983)

## Publications/Patents (5 most important)

- **J. Aktaa, M. Walter, G. Angella & E. Perelli Cippo:** Creep-fatigue design rules for cyclic softening steels, *Int. J. Fatigue* 118, 98 (2019) [doi:10.1016/j.ijfatigue.2018.08.008](https://doi.org/10.1016/j.ijfatigue.2018.08.008)
- **E. Gaganidze, D. Rupp, J. Aktaa,** Fracture behavior of polycrystalline tungsten, *J. Nucl. Mater.* 446, 240 (2014) [doi:10.1016/j.jnucmat.2013.11.001](https://doi.org/10.1016/j.jnucmat.2013.11.001)
- **J. Aktaa, W.W. Basuki, T. Weber, P. Norajitra, W. Krauss,** et al., Manufacturing and joining technologies for helium cooled divertors, *Fusion Eng. Des.* 89, 913 (2014) [doi:10.1016/j.fusengdes.2014.01.028](https://doi.org/10.1016/j.fusengdes.2014.01.028)
- **E. Gaganidze, J. Aktaa,** Assessment of neutron irradiation effects on RAFM steels, *Fusion Eng. Des.* 88, 118 (2013) [doi:10.1016/j.fusengdes.2012.11.020](https://doi.org/10.1016/j.fusengdes.2012.11.020)
- **J. Aktaa, R. Schmitt,** High temperature deformation and damage behavior of RAFM steels under low cycle fatigue loading: Experiments and modeling", *Fusion Eng. Des.* 81, 2221 (2006) [doi:10.1016/j.fusengdes.2006.03.002](https://doi.org/10.1016/j.fusengdes.2006.03.002)