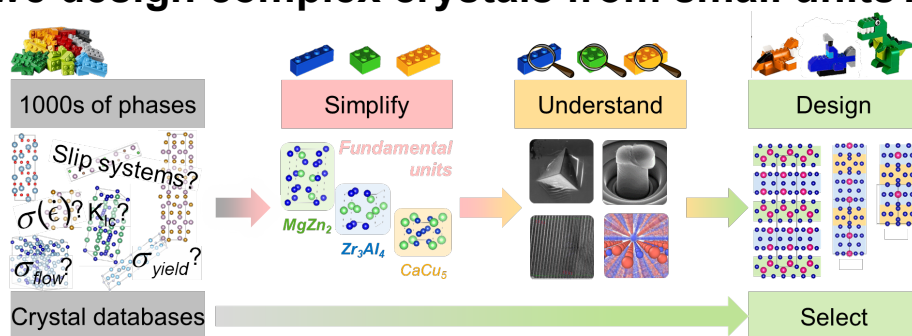


Crystal – LEGO:

Can we design complex crystals from small units?



Institute of Physical
Metallurgy and
Materials Physics

RWTH Aachen University

9 December 2019

About us:

Research at the Institute of Metallurgy and Materials Physics at RWTH Aachen University focuses on fundamental and applied materials physics. Materials are characterised, modelled and improved in interdisciplinary collaborations at national and international level and using state-of-the-art equipment.

We are looking for:

An enthusiastic candidate who

- holds (or will soon hold) a doctoral degree in Materials Science, Materials Engineering or Physics
- is interested in working on fundamental questions of plastic deformation to ultimately support discovery of new materials for extreme conditions
- is keen to apply different computational methods at the atomic scale (DFT and/or MD)
- has a very good command of English (and preferably also German) and enjoys working in a team

Your responsibilities and the project:

The vast majority of engineering materials are based on metallic alloys centred around single elements, e.g. Fe, Al, Mg, Ti or Ni. As even the most sophisticated of these are reaching their performance limits, we need to develop completely new classes of materials. With >100,000 binary and ternary systems, intermetallics are a promising candidate; but how can those combining strength and ductility be found?

These research positions will constitute a team effort at IMM as part of the ERC Starting Grant 'FunBlocks' to explore plastic deformation in hard crystals. This will involve mechanical analysis of complex intermetallic crystals from one binary and one ternary system to systematically quantify and compare the properties of their small building blocks and their combinations in large unit cells. This may be done by calculations of generalized stacking fault energies as well as dynamics of dislocation motion to understand the critical mechanisms and configurations of the dislocation cores and how these are affected by the local structure.

Ultimately, the aim is to provide understanding of essential intermetallic building blocks and enable a data- and knowledge-driven search for new structural materials.

Depending on previous post-doc experience, this position may be combined with a group leader position, including supervision of doctoral students and funding acquisition.

We offer:

The position is offered on a temporary contract for a fixed term of initially 24 months (full-time, extendable to a maximum of 60 months). It is also available as part-time employment per request. The salary is based on the German public service salary scale (TV-L). RWTH Aachen University is certified as a "Family-Friendly University". We welcome applications from all suitably qualified candidates regardless of gender. We particularly welcome and encourage applications from women, disabled persons and ethnic minority groups, recognizing they are underrepresented across RWTH Aachen University. The principles of fair and open competition apply and appointments will be made on merit. RWTH Aachen is an equal opportunities employer. We therefore ask you not to include a photo in your application. For information on the collection of personal data pursuant to Articles 13 and 14 of the General Data Protection Regulation (GDPR), please visit: <http://www.rwth-aachen.de/dsgvo-information-bewerbung>

Your contact person:

Prof. Dr. Sandra Korte-Kerzel (korte-kerzel@imm.rwth-aachen.de).

Applications (cover letter, CV and any supplementary information) should be submitted **as soon as possible**. Please note that communication via unencrypted e-mail poses a threat to confidentiality as it is potentially vulnerable to unauthorized access by third parties.