

Research focus “Advanced Materials Engineering” (AME)



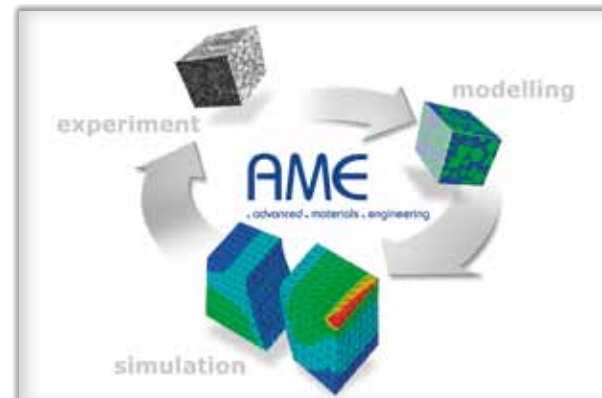
13 scientists from different departments and research institutes:

- Mechanical and Process Engineering
- Computer Science
- Institut für Verbundwerkstoffe (IVW)
- Institute for Thin Film and Surface Analysis (IFOS)

The key issues of the research focus AME are high and ultrahigh strength steels, light alloys, hybrid and filter materials and materials in particle shape. These materials are key materials for future lightweight design concepts and offer innovative solutions in the field of traffic and mechanical engineering in general. Besides that, hybrid materials are used as filter materials in process engineering and as functionalized materials as well. Materials in particle shape are candidates for high-quality coatings. Furthermore nanoparticles are used for drug delivery systems as well as for environmental technology. High-grade network of experiment, modelling and simulation is one important feature of AME. The range of research topics varies between the fields materials sciences, production and process engineering and stands for a central competence field of the University of Kaiserslautern, in which engineers and natural scientists as well as computer science groups intensely collaborate.

Key points of the research focus of AME are to develop innovative products for the automobile and aviation industry as well as for the biological and medical area. In the field of traffic engineering these research topics are the basis for a more effective material and primary energy consumption and finally for the reduction of pollution. According to this, current research activities work on the characterization, modelling and simulation of localized deformations in different kinds of advanced engineering materials. One vision of AME is the utilization of materials as their own sensors for early damage detection in components on the basis of physically coupled cross effects. A high degree of interdisciplinary and internationality collaboration is significant for the research projects of AME. This is demonstrated by invited presentations about latest research results on international conferences and especially by direct co-operations between research groups in Kaiserslautern, Germany and abroad. A fast industrial application of the newest results is a substantial goal of the AME activities.

For detailed information regarding the chairs and institutes involved in AME as well as the current projects of the research focus Advanced Material Engineering (AME) please check out the homepage: www.uni-kl.de/WKK/AME.



AME-strategy: Interaction of experiment, modelling and simulation

Contact



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Research Areas

- **High und ultrahigh strength steels, light alloys and composites**
Key materials for future lightweight design concepts
- **Hybrid materials**
Hybrid and filter materials for issues of process engineering and as functionalized materials
- **Materials in particle shape**
High-quality coatings, nanoparticles for drug delivery systems as well as for environmental technology

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