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BRIEF DESCRIPTION OF THE UNIT / RESEARCH GROUP

The Institute of Forming Technology and Machines (IFUM) and the Institute of Metallurgy, Mechanical Engineering and Transport (IMMET) have been actively sharing their experience in research and education since the end of the 1980s. A basis for the efficient collaboration is the outstanding scientific work of both partner institutes and the available high-class research equipment.

The main research activity of the IFUM, one of Germany's most renowned institutes in the field of forming technologies, was and remains experimental and computer-aided design and optimization of forming processes of semi-finished products (second stage of material processing). Here the focus in the mathematical material description is directed to the application-related phenomenological modeling of the mechanical properties. The research activities of the IMMET are focused on the fundamental research with the physical-based multiscale principles in material modelling in the context of the first stage of processing in metal forming. Moreover, the investments made in recent years have helped the IMMET to achieve the leading position in Eastern Europe.

The combination of different research areas of the partner institutes promises to expand the spectrum of provided interdisciplinary teaching facilities. This collaboration with the IMMET offers a more effective co-working on the future joint projects and a significant increase of the scientific competence in the characterization and modeling of materials and processes.

WHAT WE OFFER / PROJECT DESCRIPTION

1. Characterization of advanced metallic materials and interfaces in metallic composite materials with the help of thermo-mechanical testing systems, e.g. Gleeble 3800 or forming and quenching dilatometer DIL 805A/D+T.
2. Numerical modeling as well as optimization of production routes for improving the mechanical strength and formability of various steels.
3. Experimental studies of metal forming processes.
4. FE- based design of metal forming processes.

KEYWORDS

Metal forming processes, FE-based process design, advanced metallic materials, material characterization, interface layers, numerical modeling of materials

COLLABORATIONS SOUGHT

1. Joint research projects.
2. Joint publications.
3. Exchange of guest researchers.