

October 19–26, Düsseldorf Trade Fair Centre, Hall 7.0, Booth SC01

# **K 2016 – FOR YOUR SUCCESS – OUR RESEARCH COMPETENCES**





## ABOUT FRAUNHOFER

The Fraunhofer-Gesellschaft, with its specialized institutes for plastic and rubber material, is the leading organization for applied research in Europe.

Based on your needs we develop, implement and optimize processes, products and equipment until they are ready for use. Sometimes an idea is all that's needed. Because in the best case we already know – or at least have a vision for – the necessary developments.

For this purpose we work in all the application-relevant fields of expertise for contractual partners from industry and the public sector. The Fraunhofer-Gesellschaft currently employs a staff of 24,000, operates 67 institutes and research units at locations throughout Germany and manages a total annual research budget of more than 2.1 billion euros.

Applied research is a crucial factor in business success in the plastic and rubber industry, combining future-driven research knowledge with market-driven needs and changes in the social environment. The specialized Fraunhofer Institutes deliver applied research excellence, market knowledge and practical, innovative ideas. We are helping to shape the future market for the plastic and rubber industry.

Come aboard and find out more about future developments in plastic and rubber materials, surfaces, processes, testing and recycling.

**YOUR SUCCESS IS OUR CHALLENGE. CREATING FUTURE INNOVATIONS IN PLASTIC AND RUBBER. WE'RE LOOKING FORWARD TO YOUR VISIT.**

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**Visit us from October 19 to 26, 2016 at the trade fair**

### **K 2016**

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**OUR COMMON CHALLENGE – WE ALL WORK TOGETHER AS A TEAM FOR CAST-OFF AND BEYOND.**



**MATERIALS – STABLE AND LIGHTWEIGHT WITHOUT LIMITS**

- We generate new properties by advanced blending and reinforcement by matched (aligned) composites
- We are working on upgrading bio-based materials for automotive and packaging purposes
- Materials for all types: powders, fibers, foams, (non-)wovens, films and bulk materials

**SURFACES – FUNCTIONAL TO THE CORE**

- We use adapted coatings to protect surfaces against mechanical and chemical impact
- We develop thin films with optimized optical, electrical or bio-functional properties
- Our films are adapted for good adhesion to the coated material, while adhesion onto our surfaces is reduced if required (easy-to-clean, elastic release for demolding and anti-ice)
- Our films cover a broad spectrum of applications, from simple decoration to advanced ultra-barriers and anti-counterfeiting applications

**PROCESSES – PATHWAY TO INNOVATION**

- All the relevant technical methods for the shaping of materials are available in our institutes, including different types of injection molding and extrusion as well as laser-based techniques
- For surface treatment and patterning, methods using lasers, plasma and different printing techniques are available
- Techniques are combined to process complex geometries as well as composites, e.g. fiber-reinforced materials to develop lightweight products for advanced mobility concepts

**TESTING – QUALITY ASSURED**

- We test products at every stage of production – starting from characterization of the materials to be used with respect to their chemical composition and physical properties, their change during production and shape forming processes, and their improvement by coating or reinforcement
- Analytics and tests are provided to characterize the products (e.g. with respect to reliability) and the production processes (in-line diagnostics)
- All types of properties are covered (e.g. mechanical properties, geometric dimensions, chemical composition, electrical and optical properties as well as bio-functionality) and controlled on a scale from meters down to nanometers

**RECYCLING – FOR A SUSTAINABLE FUTURE**

- Wastes from different sources (end-of-life or production waste) are examined and evaluated with regard to separating materials for refeeding into the production process or energetic use
- Processes are developed to qualify waste materials (from electronic, automotive or consumer sectors as well as bio-based by-products) for production
- Emphasis is placed on the issue of material fatigue to ensure the reliability of products manufactured totally or partly from waste materials

Each of these topics involves a dialogue between bottom-up simulation approaches and top-down engineering concepts.

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