

**CORNET Call for Proposals: International Collective Research**  
**--- Organisation profile ---**

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| Organisation:            | <b>Fraunhofer Institute for Applied Polymer Research IAP</b><br><b>- Research Division Polymeric Materials and Composites PYCO -</b>  |
| Website address:         | <a href="https://www.iap.fraunhofer.de/en/research/pyco1.html">https://www.iap.fraunhofer.de/en/research/pyco1.html</a>   |
| Organisation typology:   | <input type="checkbox"/> SME Association<br><input type="checkbox"/> University<br><input checked="" type="checkbox"/> Research Centre<br><input type="checkbox"/> Other (please specify)   |
| Sector:                  | <input checked="" type="checkbox"/> Materials<br><input checked="" type="checkbox"/> Process Engineering, Energy Technology and Environment<br><input type="checkbox"/> Business Management and Organisation<br><input type="checkbox"/> Construction and Production<br><input checked="" type="checkbox"/> Chemistry, Textile, Food, Health and Medical<br><input checked="" type="checkbox"/> Measurement and Information   |
| Field of specialisation: | polymer development; simulation & design; fibre-reinforced composites; multi-material mix; polymer processing   |
| Expertise offered:       | <p>The research division Polymeric Materials and Composites PYCO is your competent partner in all questions of polymer-based lightweight construction with fibre-plastic composites and complex fibre composite components in multi-material design.</p> <p>Our holistic approach includes not only novel construction methods, material design, structures and related manufacturing technologies but also the development of sustainable recovery and recycling strategies for end-of-life scenarios.</p> <p>We offer you individual solutions thanks to our state-of-the-art equipment and technologies.</p> <p>Starting with the development of special polymers and fibre composite semi-finished products, through the design of prototypes, to the planning and implementation of production processes suitable for large-scale series production, we can thus offer you all the important lightweight construction competences of the value-added chain under one roof, from monomers to energy-efficient high-performance composite components.</p> <p>Working Groups:</p> <p>1. Polymer Development</p> <p>The synthesis and formulation of new (reactive) polymer materials as matrix resins for fibre composites, but also for applications in microelectronics and photonics, are the focus here. The achievement of application-specific property</p> |

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|                               | <p>profiles with frequently contradictory parameters is a major challenge. One focus of the activities is the development of damage-tolerant, flame-retardant and thermostable thermosets, whereby the sustainability aspect in the form of renewable raw materials and polymers suitable for recycling and repair is becoming increasingly important. Profound expertise in the field of energy-efficient curing processes (infrared, microwave, UV and e-beam) and the duromers adapted to these processes complete the profile of the working group.</p> <p><b>2. Semi-finished Products</b></p> <p>At the interface between material development and production, the working group develops new and tailor-made semi-finished products for polymer-based lightweight construction systems from individual components to large-scale production. The focus is on the production of prepregs on scalable production lines and the development and process-technological evaluation of core materials and moulding compounds such as Sheet and Bulk Molding Compounds (SMC/BMC). Renewable raw materials and energy-efficient processes play a central role here. This also includes the specific finishing of the polymer semi-finished products with regard to mechanical material performance and further functionalisations such as fire resistance and antimicrobial component surfaces.</p> <p><b>3. Analytics and Structural Testing</b></p> <p>The analyses of thermal and mechanical properties of polymeric materials, semi-finished products and components represent the core competence of the working group. In addition, investigations of the fatigue strength are carried out with superimposed environmental simulations. The working group also has its own fire laboratory for determining fire resistance and classification according to building material classes.</p> <p><b>4. Simulation and Design</b></p> <p>Along the product-oriented value-added chain, the Simulation and Design working group is concerned with the cross-sectoral development of energy-efficient lightweight construction solutions and associated manufacturing technologies. Starting with the initial idea, through the design of prototypes, to the production-related implementation of complex technology demonstrators, the focus is primarily on the design, coupled structure and process simulation, as well as on the manufacture and testing of function-integrated FKV construction methods.</p> |
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