

奥地利新材料研究

ADVANCED MATERIALS RESEARCH FROM AUSTRIA



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OFFICE OF SCIENCE AND
TECHNOLOGY AUSTRIA
BEIJING

 ADVANTAGE
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Science and Technology Section of the Austrian Embassy Beijing
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Cover photo: Austrian Research Promotion Agency

Austrian Federal Ministry for Transport, Innovation and Technology

The Austrian Research Policy in Advanced Materials

Materials science is an interdisciplinary field which deals with the discovery and design of new materials. Radical materials research can drive the creation of new products or even new industries, but stable industries also employ materials scientists to make incremental improvement and troubleshoot issues with currently used materials. Industrial applications of materials science include materials design, cost-benefit trade-offs in industrial production of materials, processing and analytical techniques.

Austria has a long tradition in materials science. In the area of metals research Austria has over 100 companies with a turnover of € 43 billion, an export quota of 90% and a budget for R&D of about € 400 million a year. Several research institutes are working in the area of advanced materials.

Materials science is a very important research field in Austria and is funded by several research programs from the Austrian Federal Ministry for Transport, Innovation and Technology (BMVIT) with about € 200 million a year. The Austrian Research Promotion Agency (FFG) General Programmes cover in particular “classical” mechanical engineering or the metal and chemical industries, as well as medical technology, measurement and control engineering, and optical instrumentation. Projects from the field of materials and manufacturing are also represented in many thematic and structural programmes. The biggest one is the research program “Production of the Future” which promotes research into core issues relevant to the manufacturing industry within innovative RTD projects, with the goal of producing competitive products and fostering increases in productivity leading to sustainable economic growth. Topics in the Area of Advanced materials within this program are nanotechnology, high-tech materials and surface and coatings.

奥地利联邦交通、创新与技术部

奥地利在新材料领域的科研政策

材料科学是关于发现及设计新材料的跨学科领域。材料学突破性发展可以推动新产品的研发甚至新产业的建立，但已经稳定发展的工业也聘请材料学家对现有的材料逐步改善并解决问题。材料科学的工业应用包括材料设计、材料工业生产中成本效益的权衡以及工业设计和分析技术。

奥地利在材料科学研究领域历史悠久。奥地利在金属研究领域有 100 多家企业，年营业额超过 430 亿欧元，出口率达 90%，每年用于科学研究与试验的经费近 4 亿欧元。多家科研机构正致力于新材料领域的研究。

材料科学是奥地利十分关键的研究领域，奥地利联邦交通、创新与技术部（BMVIT）带头的几个科研项目每年为其提供 2 亿欧元的资金支持。奥地利研究促进署（FFG）的旨在加强企业研发的资助项目中特别涵盖了“传统”机械工程、金属和化工行业、医疗技术、测量和控制工程及光学仪器等领域。许多提高企业的市场和创新能力、促进国家重点发展项目和跨国合作的资助项目也加强材料和制造领域的发展。其中最大的科研项目是“未来制造”，该项目将促使科研成为欧盟研究与技术开发政策指导下的生产制造行业的核心议题，其目标为生产有竞争力的产品、推动生产力的提高以实现可持续的经济增长。该项目中新材料的领域包括纳米科技、高科技材料及表面和涂层技术。

ADVANTAGE AUSTRIA - 在全球为您提供服务

ADVANTAGE AUSTRIA, with its more than 110 offices in over 70 countries, provides a broad range of intelligence and business development services for both Austrian companies and their international business partners. Our 750 employees and 40 consultants around the world can assist you in locating Austrian suppliers and business partners. We organize more than 1,000 events every year to bring business contacts together. Other services provided by ADVANTAGE AUSTRIA offices range from introductions to Austrian companies looking for importers, distributors or agents to providing in-depth information on Austria as a business location and assistance in entering the Austrian market.

ADVANTAGE AUSTRIA 与其在 70 多个国家的 110 多个服务中心所组成的全球服务网络，为奥地利企业及其国际商业伙伴提供全方位的服务。由 750 位雇员和 40 位顾问组成的工作团队为您服务，帮助您在奥地利找到合适的供应商和商业伙伴。为了建立商业联系，我们每年组织 1000 多场活动。此外，ADVANTAGE AUSTRIA 的服务范围从帮助奥地利企业寻找进口商、代理商以及贸易伙伴，建立商业联系到为您提供有关经济环境和进入奥地利市场的详细信息。

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Austrian Embassy Beijing
奥地利共和国驻华大使馆

Science and Technology Section
科技处



OFFICE OF SCIENCE AND
TECHNOLOGY AUSTRIA
BEIJING

Science and Technology Section of the Austrian Embassy Beijing

The Science and Technology Section of the Austrian Embassy in Beijing is in charge of the cooperation in science and technology with the competent authorities and institutions in China, Hong Kong S.A.R., and Mongolia. It serves as an information hub and strategic interface in the areas of science, research, technology and innovation and is financed by the Austrian Federal Ministries for Transport, Innovation and Technology (BMVIT), Education, Science and Research (BMBWF) and Federal Ministry for Digital and Economic Affairs (BMDW) within the framework of the Austrian Ministry for Europe, Integration and Foreign Affairs (BMEIA).

The Science and Technology Section is the first point of contact for Chinese scientists on topics concerning Austrian universities and research institutions, as well as the corresponding ministries. It acts as a "matchmaker" between Chinese and Austrian knowledge and research facilities and informs on Austria's strengths in the respective research fields. The overall objective is to strengthen a results-oriented, sustainable cooperation between the two countries in the field of research and technology development.

奥地利驻华大使馆科技处代表奥地利共和国在中国、香港特别行政区和蒙古国与相关部门机构开展科学技术合作事宜。作为一个涉及科学、研究、科技和创新领域的信息和战略窗口，科技处由奥地利联邦欧洲、融入和对外事务部（BMEIA）协同联邦交通、创新与技术部（BMVIT），联邦教育科学与研究部（BMBWF）和联邦数字化和经济区位部（BMDW）组建，并由后三者提供财政拨款。

科技处是为中国学者和科技人员解答有关奥地利、奥方大学和其他科研机构问题的官方部门。作为中奥科学和研究机构的“中间人”科技处提供有关奥地利科研现状及其优势等方面的信息。科技处总体目标在于加强两国在科技发展领域实质性的长期合作。

Contact

Science and Technology Section of the Austrian Embassy Beijing

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Research Institutions

科研机构

Company / Institute	Montanuniversitaet Leoben Industrial Liaison Department Department of Polymer Engineering and Science
Research focus	<p>Montanuniversitaet Leoben (MUL) is a specialized Technical University located in Leoben, Austria. One important research field of MUL is represented by the Department of Polymer Engineering and Science with six chairs covering the whole process chain from the molecule to the engineering material via processing to the final high quality part. Together with the Polymer Competence Center Leoben (PCCL) more than 200 employees are active in the field of Polymer Engineering and Science.</p> <p>Together with the Chair of Polymer Processing the emphases are on:</p> <p>Injection Moulding</p> <ul style="list-style-type: none"> ▪ Sensor and actuator technologies in moulds ▪ Quality management and measuring of demolding forces <p>Extrusion and Compounding</p> <ul style="list-style-type: none"> ▪ Foaming ▪ Development of control strategies for high quality ▪ Development of tailor made compounds <p>Recycling</p> <ul style="list-style-type: none"> ▪ Tailor made recyclates for technical complex applications ▪ Concepts for material recycling up to CO₂-neutrality (e.g. r2PET) ▪ Ecobalances <p>Additive Manufacturing (3D-printing)</p> <ul style="list-style-type: none"> ▪ Material development: highly filled systems with metal or ceramic powders, modified polyolefines ▪ Process development: optimisation of process, characterisation of bonding, concepts for high quality <p>Simulation</p> <ul style="list-style-type: none"> ▪ Simulation in injection moulding, extrusion, additive manufacturing ▪ influence of material data on simulation results ▪ Modelling of screws, dies, and mixing elements <p>Material Data Measurement</p> <ul style="list-style-type: none"> ▪ Rheological and thermodynamical data for FEM-simulations ▪ Rheology of highly filled polymer systems Characterization of the flow behaviour of PIM-feedstock
International partners	Academy of Sciences Brno (CZ), Chalmers University of Technology (SE), University of Chicago (USA), University of Akron (USA), East China University of Technology (CN), Ajou University Suwon (KR), University of Bradford (UK), University of Sheffield (UK), University of Zagreb (HR), École polytechnique fédérale de Lausanne (CH), EMPA (CH), RWTH Aachen (D), Technische Universitaet Muenchen (D), Faculty of Polymer Technology (SLO), Fraunhofer IKTS, IFAM (D)
Topics for cooperation	<p>The department is interested in cooperation on the following topics:</p> <ul style="list-style-type: none"> ▪ Chemistry of Polymeric Materials ▪ Designing Plastics and Composite Materials ▪ Polymer Processing ▪ Injection Moulding of Polymers ▪ Processing of Composites ▪ Material Science and Testing of Polymers ▪ Additive Manufacturing with polymers, metals, ceramics – Fused Filament Fabrication ▪ Highly filled polymers and Simulation
Contact information	<ul style="list-style-type: none"> ▪ Contact: Dr. Christian KUKLA, Christian.kukla@unileoben.ac.at T.: +43 3842 402-8403 Peter Tunner-Str. 2, 8700 Leoben, Austria www.kunststofftechnik.at

公司/机构	莱奥本矿业大学 聚合物工程和科学系
研究重点	<p>矿业大学是一所位于奥地利莱奥本的专科学技术大学。大学的一个重要研究领域是聚合物工程和科学系。该系的6个教席涵盖了从分子经过加工到最终的高质量部件的整个工程材料的工艺链。聚合物工程和科学系与莱奥本聚合物技术中心（PCCL）紧密合作，现有200多名员工。该系研究重点是：</p> <p>注塑成型：</p> <ul style="list-style-type: none"> ▪ 模具中的传感器和促动器技术 ▪ 质量管理 ▪ 测量脱模力 <p>挤出和复合：</p> <ul style="list-style-type: none"> ▪ 发泡 ▪ 制定高质量的控制策略 ▪ 开发量身定制的化合物 <p>回收：</p> <ul style="list-style-type: none"> ▪ 为技术复杂的应用量身定制回收材料 ▪ 材料回收至二氧化碳中和的概念（例如r2PET） ▪ 生态平衡 <p>增材制造（3D打印）：</p> <ul style="list-style-type: none"> ▪ 材料开发：含金属或陶瓷粉末，改性聚烯烃的高填充系统， ▪ 工艺开发：工艺优化、粘合表征、高品质概念 <p>模拟：</p> <ul style="list-style-type: none"> ▪ 模拟注塑、挤出、增材制造 ▪ 材料数据对模拟结果的影响 ▪ 螺钉，模具和混合元件的建模 <p>材料数据管理：</p> <ul style="list-style-type: none"> ▪ 有限元模拟的流变和热力学数据 ▪ 高填充聚合物体系的流变学表征粉末注射成型（PIM）原料的流动行为
国际合作	布尔诺科学院（捷克）、查尔姆斯理工大学（瑞典）、芝加哥大学（美国）、阿克伦大学（美国）、华东理工大学（中国）、亚洲大学（韩国）、布拉德福德大学（英国）、谢菲尔德大学（英国）、萨格勒布大学（黑山）、洛桑联邦理工学院（瑞士）、EMPA（瑞士）、亚琛工业大学（德国）、慕尼黑工业大学（德国）、高分子技术学院（斯洛文尼亚）、弗劳恩霍夫陶瓷技术和系统研究所及生产技术和应用材料研究所（德国）
合作课题	莱奥本矿业大学有兴趣合作的课题包括： <ul style="list-style-type: none"> ▪ 使用纳米填料制备、复合高分子部件以强化其功能 ▪ 微/纳结构高分子部件功能化
联络方式	<ul style="list-style-type: none"> ▪ 联络方式： Christian KUKLA博士：Christian.kukla@unileoben.ac.at 电话：+43 3842 402-8403 Peter Tunner-Str. 2, 8700 Leoben, Austria www.kunststofftechnik.at



Company / Institute	Montanuniversitaet Leoben Institute for Polymer Processing
Research focus	Montanuniversitaet Leoben (MUL) is one of the best technical universities in Austria. The institute for Polymer Processing has more than 40 years of experience in the development and characterisation of polymers, polymeric compounds and composites for extrusion, compounding, injection moulding and additive manufacturing. The institute has also expertise in simulation of injection moulding and extrusion processes.
International partners	<ul style="list-style-type: none"> ▪ Research Center of Nano Science and Technology, Shanghai University ▪ Additive Manufacturing Unit, Shanghai Industrial Technology Institute, Shanghai, China ▪ Magnetic Materials Group, University of Birmingham, England ▪ Department of Material Science, Friedrich-Alexander University, Germany ▪ Center for Experimental Mechanics, University of Ljubljana, Slovenia ▪ Department for Nanostructured Materials, Jozef Stefan Institute, Slovenia ▪ Department of Mechanical Engineering, University of Castilla-La Mancha, Spain ▪ Advance Fibers Laboratory, EMPA, St. Gallen, Switzerland
Topics for cooperation	<p>The Institute is interested in cooperation on the following topics:</p> <ul style="list-style-type: none"> ▪ Characterisation of polymeric compounds, metal alloys and ceramics ▪ Simulation of polymer processing and molecular dynamics ▪ Production of carbon and bio-fibres for composites ▪ Production of metal and ceramic powders for additive manufacturing ▪ Fabrication of multi-material components
Contact information	<ul style="list-style-type: none"> ▪ Contact: Dr. Joamin GONZALEZ-GUTIERREZ (BSc, MSc) Email: joamin.gonzalez-gutierrez@unileoben.ac.at WeChat ID: wid_le04h4lrvnny22 Tel.: +43-3842-402-3541 Otto Gloeckel-Strasse 2, 8700 Leoben, Austria www.kunststofftechnik.at



公司/机构	莱奥本矿业大学 高分子加工研究所
研究重点	莱奥本矿业大学（MUL）是奥地利最好的技术大学之一。 聚合物加工研究所在压铸、复合、注塑和增材制造的聚合物，聚合物和复合材料的开发和表征方面拥有40多年的经验。该研究所在注塑和压铸工艺方面也富有经验。
国际合作	<ul style="list-style-type: none"> ▪ 上海大学纳米科学与技术研究中心 ▪ 上海工业技术研究院增材制造部 ▪ 英国伯明翰大学磁性材料集团 ▪ 德国弗里德里希 - 亚历山大大学材料科学系 ▪ 斯洛文尼亚卢布尔雅那大学实验力学中心 ▪ 斯洛文尼亚Jozef Stefan研究所纳米结构材料部 ▪ 西班牙卡斯蒂利亚 - 拉曼恰大学机械工程系 ▪ 瑞士圣加仑EMPA高级纤维实验室
合作课题	莱奥本矿业大学高分子加工研究所兴趣合作的课题包括： <ul style="list-style-type: none"> ▪ 聚合物、金属合金和陶瓷的表征 ▪ 模拟聚合物加工和分子动力学 ▪ 生产复合材料用碳和生物纤维 ▪ 生产用于增材制造的金属和陶瓷粉末 ▪ 制造多材料组件
联络方式	<ul style="list-style-type: none"> ▪ 联络方式： Dr. Joamin GONZALEZ-GUTIERREZ (BSc, MSc) 邮箱: joamin.gonzalez-gutierrez@unileoben.ac.at 微信: wid_le04h4lrvnny22 电话: +43-3842-402-3541 Otto Gloeckel-Strasse 2, 8700 Leoben, Austria www.kunststofftechnik.at



Company / Institute	Danube University Krems Department for Integrated Sensor Systems (DISS)
Research focus	<p>The Danube University Krems (DUK) is solely dedicated to research and postgraduate education. About 6.000 students enroll at DUK per year.</p> <p>The Department for Integrated Sensor Systems (DISS) has been established in 2004 under the aegis of the Austrian Academy of Sciences. In April 2013, the entire institute was merged with the DUK. Currently it comprises approximately 35 scientific employees.</p> <p>The objective of the DISS is to investigate concepts and methodologies for smart sensors, their design, interconnection, and application. Research focuses on system design aspects to create sensor components optimized for system integration, which are the basis for innovative solutions in such diverse application fields as environmental monitoring, medical technology, or industrial automation, but also household appliances or cars. The research staff of the DISS comprises multidisciplinary expertise in the fields of micro- and nanotechnology, embedded systems, communication technology, and modeling/simulation required to create novel methods for sensor integration and advanced high-performance sensor systems.</p>
International partners	National and international partners covering small/medium/big industries, research institutions and academia; in total more than 50.
Topics for cooperation	Danube University is interested in cooperation on the following topics: <ul style="list-style-type: none"> ▪ Fast and highly accurate, in situ characterization of the physical parameters of thin (micro, nano, and even monatomic) films with lateral spatial resolutions in the order of a few nanometers ▪ Micro-electromechanical systems (MEMS) for high-resolution vibration, non-invasive electric field, and magnetic field strength/gradient sensing ▪ Miniaturized sensors for biomolecular diagnostics ▪ MEMS fluid sensors (flow and thermal properties, viscosity, density) ▪ Infrared sensors (bolometers, IR-chips) based on metamaterials ▪ Magnetic nanomaterials and magnetic sensors (GMR, TMR) ▪ Computational materials design (micro- and nanostructure optimization) ▪ Analytical and computer numerical modeling of individual sensors and sensor systems as well as network simulations ▪ High-precision time synchronization in sensor networks ▪ Distributed networks and embedded security for sensor networks
Contact information	<ul style="list-style-type: none"> ▪ Contact: Prof. Dr. Thilo SAUTER, thilo.sauter@donau-uni.ac.at Viktor-Kaplan-Strasse 2 E, 2700 Wiener Neustadt, Austria www.donau-uni.ac.at/en/departments/kmbt/integrierte_sensorsysteme



公司/机构	克莱姆斯多瑙大学 集成传感系统研究中心
研究重点	<p>多瑙大学是一所只有研究生课程的研究型大学。集成传感器系统中心在奥地利国家科学院的支持下成立于2004年并与2013年4月与多瑙大学合并，当前该中心有35位左右的研究人员。中心的任务是研究智能传感器的设计、互联性及应用的概念和使用的方法。集成是指功能、系统、集成电路集合在一个完整的途径中。研究的重心放在制造为系统集成所准备的传感器部件，并作为智能解决方案的一部分应用于在例如环境监测、医疗技术、工业自动化、家用及汽车等领域。中心的研究人员来自跨学科的多个领域如：微米/纳米技术、嵌入系统、通讯技术及建模和模拟。科研人员跨领域的专业背景使得该中心可以为传感器集成及先进的高性能传感器系统的研发开发出新的方法。</p>
国际合作	欧洲及全球范围内超过50家的大中小企业、研究所和学术机构
合作课题	<p>多瑙大学有兴趣合作的课题包括：</p> <ul style="list-style-type: none"> ▪ 快速、高精度、原位表征薄膜（微米、纳米、甚至单原子）的物理参数，横向空间分辨率约为几纳米 ▪ 用于高分辨率振动的微机电系统（MEMS） ▪ 无创电场、磁场强度/梯度传感 ▪ 用于生物分子诊断的微型传感器 ▪ MEMS流体传感器（流动和热性能、粘度、密度） ▪ 基于超材料的红外传感器（辐射热测量计、红外芯片） ▪ 磁性纳米材料和磁传感器（GMR, TMR） ▪ 计算材料设计（微观和纳米结构优化） ▪ 单个传感器和传感器系统的分析和计算机数值模拟以及网络模拟 ▪ 传感器网络中的高精度时间同步 ▪ 传感器网络的分布式网络和嵌入式安全性
联络方式	<ul style="list-style-type: none"> ▪ 联络方式： Thilo SAUTER教授: thilo.sauter@donau-uni.ac.at Viktor-Kaplan-Strasse 2 E, 2700 Wiener Neustadt, Austria www.donau-uni.ac.at/en/departments/kmbt/integrierte_sensorsysteme

Company / Institute	Johannes Kepler University Linz (JKU) Institute of Polymer Product Engineering
Research focus	<p>The Institute for Polymer Product Engineering (JKU-IPPE) was established in 2009 in the frame of the Polymer Technology and Engineering Program at the Johannes Kepler University (JKU) Linz. The institute places its main education and research activity on the field of design with polymeric materials and polymer product engineering in closed cooperation with other institutes of the Polymer Program. In general, the institute deals with the design of parts and components made from polymeric materials and with the various aspects of the structural integrity assessment for polymeric materials and components. In addition to the application of conventional unreinforced and fiber reinforced structural polymeric materials, special emphasis is dedicated to novel multifunctional, smart polymeric materials for demanding engineering applications</p> <p>Furthermore, two main research focus of IPPE are:</p> <p>Virtual and physical prototyping and additive manufacturing of conventional and smart polymeric materials on nanomicro and macro-scale for engineering and medical (medical models for treatments and education) applications.</p> <p>Development and implementation of a comprehensive multi-scale integrative simulation methodology for polymeric components – engineering molecular dynamics – processing – micromechanics – structural behaviour and reliability and life time assessment model-ling and simulations</p>
International partners	<ul style="list-style-type: none"> ▪ Europe: Slovenia, Hungary, Germany, Spain, Belgium, different universities and re- search institutes ▪ USA: Stevens Institute of Technology, NY; Northwestern University, Evanston, Compo-sites Manufacturing and Simulation Center, Purdue University, Lafayette, Indiana ▪ China: IPPE JKU and Heilongjiang University (Harbin), China – Austria, 2016 – 2018 Shanghai University (Dr. Afang Zhang Distinguished Professor of Polymer Chemistry and Physics Department of Polymer Materials, Zhong-fu ZHOU Ph.D. D.Phil. Distinguished Professor School of Materials Science and Engineering) Shenzhen Institute of Advanced Technologies, Chinese Academy of Sciences ▪ Japan: Yamagata University, Toyohashi Institute of Technology, Kyushu University <p>In addition to the academic partners IPPE has research cooperation with companies mainly in Europe, but also in Japan and China</p>
Topics for cooperation	<ul style="list-style-type: none"> ▪ Design, modeling and simulation of smart materials and digital material system. Development of verification methods for the simulations ▪ Multiscale modelling and simulation of advanced components – from molecular dynamics to component reliability ▪ Implementation of a fully digitized product life cycle management system and adaption for the requirements of various company partners. ▪ Additive manufacturing of polymer ▪ Elastomer and elastomer components
Contact information	<ul style="list-style-type: none"> ▪ Contact: Univ. Prof. Dr. Mont Zoltan MAJOR: Zoltan.major@jku.at Tel.: +43 7322 4686596 Dr. Ommeaymen Sheikhejad-Bishe: ommeaymen.sheikhnejad-bishe@jku.at Altenberger Straße 69, 4040 Linz, Austria http://www.jku.at/ippe



公司/机构	约翰内斯·开普勒大学（林茨） 聚合物产品工程学院
研究重点	<p>高分子产品工程研究所（JKU-IPPE）成立于2009年，属于坐落于林茨的约翰内斯开普勒大学（JKU）下的高分子技术与工程项目框架内的一部分。该研究所与聚合物项目的其他研究所密切合作，将其主要的教育和研究活动置于聚合物材料和聚合物产品工程的设计领域。一般而言，该研究所负责设计由聚合物材料制成的零件和部件，以及聚合物材料和部件的结构完整性评估的各个方面。除了传统的非增强和纤维增强结构聚合物材料的应用外，学院还特别强调开发用于要求苛刻的工程应用的新型多功能，智能聚合物材料。</p> <p>此外，IPPE的两个主要研究重点是：</p> <ul style="list-style-type: none"> ▪ 用于工程和医疗（治疗和教育的医疗模型）的微纳级和宏观级的传统和智能聚合物材料的虚拟及物理原型制造和增材制造。 ▪ 开发和实施用于聚合物组件的包含工程分子动力学 - 加工 - 微观力学 - 结构行为和可靠性以及寿命评估模型 - 模拟和模拟的综合多尺寸的综合模拟方法。
国际合作	<ul style="list-style-type: none"> ▪ 欧洲：斯洛文尼亚、匈牙利、德国、西班牙、比利时、不同的大学和研究机构 ▪ 美国：纽约史蒂文斯理工学院；西北大学、埃文斯顿、复合材料制造和模拟中心、普渡大学、拉斐特、印第安纳州 ▪ 中国：IPPE JKU和黑龙江大学（哈尔滨），中国 - 奥地利，2016年 - 2018年；上海大学；中国科学院深圳先进技术研究所 ▪ 日本：山形大学、丰桥理工学院、圭树大学 <p>除了学术合作伙伴，IPPE还与主要在欧洲，日本和中国的公司进行研究合作</p>
合作课题	<ul style="list-style-type: none"> ▪ 智能材料和数字材料系统的设计、建模和模拟；开发和验证模拟方法 ▪ 高级组件的多尺度建模和模拟 - 从分子动力学到组件可靠性 ▪ 实施完全数字化的产品生命周期管理系统，并根据各公司合作伙伴的要求进行调整。 ▪ 聚合物的增材制造 ▪ 弹性体和弹性体组件
联络方式	<ul style="list-style-type: none"> ▪ 联络方式： Univ. Prof. Dr. Mont Zoltan MAJOR: zoltan.major@jku.at 电话: +43 7322 4686596 Ommeaymen Sheikhnejad-Bishe博士: ommeaymen.sheikhnejad-bishe@jku.at Altenberger Straße 69, 4040 Linz, Austria http://www.jku.at/ippe

Company / Institute	Vienna University of Technology Institute of Sensor and Actuator Systems (ISAS), Microsystems Technology
Research focus	<p>On material level Prof. U. Schmid and his research team focus since many years on functional thin films, their electro-mechanical properties and how to improve their film properties for a later integration into MEMS/NEMS sensors and actuators. In detail, we concentrate on piezoelectric thin films such as sputter-deposited aluminum nitride, scandium aluminum nitride and spin-on deposited polyvinylidene fluoride (PVDF), all being CMOS-compatible. We investigate the impact of deposition parameters, film thickness, substrate-preconditioning, and post-deposition annealings on mechanical (e.g. Young's modulus, film stress), electrical (e.g. leakage current, permittivity) and electro-mechanical parameters (e.g. piezoelectric constants). With respect to PVDF, the admixture of nanoparticles to tailor the electro-mechanical properties is also of high interest. Based on this knowledge, MEMS resonators are fabricated leading together with a careful selected design to an enhance device performance. Secondly, silicon carbide (polycrystalline, amorphous) is in the focus to enhance the robustness for MEMS/NEMS-based devices and systems. Besides the pure electrical and mechanical parameters mentioned above the piezoresistive coefficients are investigated for poly-SiC, also for the integration into micromachined silicon sensors.</p>
International partners	<p>Selected, actual cooperation partners are: University of Erlangen-Nuremberg (Germany), within Marie Curie Skłodowska European Training Network (see https://spm20.eu/), Universidad de la Castilla-La Mancha (Spain), Universidad Politécnica de Madrid (Spain), TU Brno (Czech Republic), University of Cambridge (Great Britain), Fraunhofer for Silicon Technology (Germany), Fondazione Bruno Kessler (Italy), Imperial College London (Great Britain).</p>
Topics for cooperation	<p>The Institute is interested in the cooperation on the following topics:</p> <ul style="list-style-type: none"> ▪ Simulation of material properties based on e.g. density functional theory (DFT) or other approaches/methods ▪ advanced material characterization techniques (e.g. at low and high temperatures), basically all enabling a better understanding of our material properties for MEMS/NEMS based devices ▪ combination of our MEMS/NEMS devices with other functional materials (e.g. magnetic, polymers) to measure additional physical and chemical quantities.
Contact information	<ul style="list-style-type: none"> ▪ Contact: Prof. Dr. Ulrich SCHMID: ulrich.e366.schmid@tuwien.ac.at Tel.: +43-(0)1-58801x36689, Gusshausstrasse 27-29, 1040 Vienna, Austria http://www.isas.tuwien.ac.at

公司/机构	维也纳技术大学 传感器和执行器系统研究所（ISAS），微系统技术
研究重点	<p>Schmid教授和他的研究团队多年来专注于材料层面功能性薄膜、其机电性能以及如何改善其薄膜性能，以便以后集成到MEMS / NEMS传感器和执行器中。具体而言，我们专注于压电薄膜，如溅射氮化铝、钽氮化铝和旋涂沉积聚偏二氟乙烯（PVDF），均与CMOS兼容。我们研究了沉积参数、薄膜厚度，基板预处理和沉积后退火对机械（例如杨氏模量、薄膜应力），电气（例如漏电流、介电常数）和电子机械参数（例如压电常数）的影响。关于PVDF，纳米粒子的混合物以定制电子机械性能也具有非常高的吸收性。</p> <p>基于这些知识，MEMS谐振器的制造与精心挑选的设计相结合，以提高器件性能。其次，碳化硅（多晶、非晶）是重点，以增强基于MEMS / NEMS的器件和系统的鲁棒性。除了上面提到的纯电子和机械参数之外，还研究了压阻系数用于poly-SiC，也用于集成到微机械硅传感器中。</p>
国际合作	埃 尔 兰 根 - 纽 伦 堡 大 学 （ 德 国 ） 在 MarieCurieSkłodowska 欧 洲 培 训 网 络 （ 见 https://spm20.eu/ ） ； Universidad de la Castilla-La Mancha （ 西 班 牙 ） ， UniversidadPolitécnica de Madrid （ 西 班 牙 ） ； TU Brno （ 捷 克 共 和 国 ） ； Cam-bridge 大 学 （ 英 国 ） ； Fraunhofer for Silicon Technology （ 德 国 ） ； Fonda-zione Bruno Kessler （ 意 大 利 ） ； 帝 国 理 工 学 院 伦 敦 （ 英 国 ） 。
合作课题	研究所有兴趣合作的课题包括： <ul style="list-style-type: none"> ▪ 基于密度泛函理论（DFT）或其他方法模拟的材料特性 ▪ 先进的材料表征技术（例如在低温和高温下），深入研究基于MEMS / NEMS的器件的材料特性 ▪ 研究MEMS / NEMS器件与其他功能材料（例如磁性，聚合物）相结合，以测量额外的物理和化学量
联络方式	联络方式： Ulrich SCHMID教授： ulrich.e366.schmid@tuwien.ac.at 电话：+43-(0)1-58801x36689, Gusshausstrasse 27-29, 1040 Vienna, Austria http://www.isas.tuwien.ac.at



Company / Institute	V-Trion Textile Research GmbH
Research focus	<p>V-trion textile research GmbH is one of the pioneering non-profit research organization offering high performance finishing for technical textiles and other polymeric substrate. The scientific focus of this institute involves in the areas of nanocoating technology of any flexible substrate using Plasma and chemical process for the application in Automotive, aerospace, construction, medical, electronics, and filtration media. World largest low pressure plasma reactor "Nano-Plasmacoater BAG" belongs to this group for high-tech finishing. The functionalized nanoscaled ultrathin (<50 nm) coatings deposited using hydrocarbon/nonpolymer gaseous mixture ensure the permanent surface modification of textile material. Highly crosslinked and branched plasma polymers exhibit strong linkage to the fibers, thus providing a long-term mechanical stability of the nanocoating. Besides V-Trion's plasma surface modification technology, some other potential areas of research lines are as follows.</p> <ul style="list-style-type: none"> ▪ Plasma/Chemical modification technology ▪ Electronic-Textile, Sensor Textile ▪ 3D Printing/ Rapid Prototyping ▪ Embroidery/ Knitting Technology ▪ Light weight and composite Technology ▪ Smart-Textile technology ▪ Textile Chemical and Physical properties Testing service <p>Due to some extraordinary contribution to the science and innovation V-Trion textile research GmbH has awarded several prizes from the government during the last couple of years.</p>
International partners	V-trion GmbH is currently collaborating with 92 national and 15 international partners around the world
Topics for cooperation	<p>The Institute/Center/Department is interested in cooperation on the following topics:</p> <ul style="list-style-type: none"> ▪ Plasma cleaning, nanostructuring, activation, functionalization and nanocoating of Polymeric substrate/ textile ▪ Surface modification of flexible or rigid polymeric/nonpolymeric substrate ▪ Large area flexible electrode fabrication, metallized or non metallized yarns ▪ Wearable and nonwearable technology ▪ Flexible sensors: E-textile sensor technology (thermal, pressure, moisture sensors etc) ▪ Light Weight: Composite fabrication (thermoplastic/thermoset) technology, spacer fabric, 3D fabric ▪ 3D Printing technology ▪ E-Textile: Flexible fabric structure using conductive/ nonconductive yarns (carbon, Polymeric, piezoelectric yarn, Ag, Stainless steel, Cupper metallized or nonmetallized yarns) ▪ Tailored fiber placement technology (TFP)
Contact information	<ul style="list-style-type: none"> ▪ Contact: Dr. Gaffar HOSSAIN: g.hossain@v-trion.at Tel.: +43 6768 43771600 Schwefelbadstrasse 2, A-6845 Hohenems, Austria www.smart-embroideries.eu



trion
textile
research

公司/机构	V-trion纺织研究公司
研究重点	<p>V-trion纺织研究有限公司是一家开创性的非营利性研究机构，为技术纺织品和其他聚合物基材提供高性能精加工。</p> <p>该研究所的科学重点涉及使用等离子体和化学工艺的任何柔性基板的纳米涂层技术领域，该技术可用于汽车、航空航天、建筑、医疗、电子和过滤介质。世界上最大的低压等离子体反应器“Nano-Plasmacoater BAG”属于这一领域并用于高科技精加工上。使用烃/非聚合物气态混合物沉积的官能化纳米级超薄（<50nm）涂层确保了纺织材料的永久性表面改性。高度交联和支化的等离子体聚合物表现出与纤维的强连接，从而提供纳米涂层的长期机械稳定性。除了V-Trion的等离子体表面改性技术，研究线的其他一些潜在领域如下。</p> <ul style="list-style-type: none"> ▪ 等离子/化学改性技术 ▪ 电子纺织品，传感器纺织品 ▪ 3D打印/快速原型制作 ▪ 刺绣及针织技术 ▪ 重量轻、复合技术 ▪ 智能纺织技术 ▪ 纺织化学和物理性能测试服务 <p>由于对科学和创新的杰出贡献，V-Trion纺织品研究有限公司在过去几年中获得了政府颁发的多项奖项。</p>
国际合作	V-trion公司目前与15个国际及92个国内合作伙伴紧密合作。
合作课题	<p>V-trion感兴趣合作的课题包括：</p> <ul style="list-style-type: none"> ▪ 等离子清洗、纳米结构、活化、功能化和纳米涂层的聚合物基材/纺织品柔软/刚硬基 ▪ 柔性或刚性聚合物/非聚合物基材的表面改性 ▪ 大面积柔性电极制造、金属化或非金属化纱线 ▪ 可穿戴和非穿戴的技术 ▪ 柔性传感器：电子纺织传感器技术（热、压力、湿度传感器等） ▪ 重量轻：复合材料制造（热塑性/热固性）技术、间隔织物、3D织物 ▪ 3D打印技术 ▪ 电子纺织品：使用导电/非导电纱线（碳、聚合物、压电纱、银、不锈钢、铜金属化或非金属纱线）的柔性织物结构 ▪ 量身定制的光纤贴装技术（TFP）
联络方式	<ul style="list-style-type: none"> ▪ 联络方式： Gaffar HOSSAIN博士：g.hossain@v-trion.at 电话：+43 676 843771600 Schwefelbadstrasse 2, A-6845 Hohenems, Austria www.smart-embroideries.eu/

Companies

公司



Company / Institute	AVL List GMBH
Research focus	<p>AVL is the world's largest independent company for development, simulation and testing technology of powertrains (hybrid, combustion engines, transmission, electric drive, batteries and software) for passenger cars, trucks and large engines.</p> <p>AVL is acting in the following scope of business: Development of Powertrain Systems: AVL develops and improves all kinds of powertrain systems and is a competent partner to the engine and automotive industry. Simulation: In addition, AVL develops and markets the simulation methods which are necessary for the development work. Engine Instrumentation and Test Systems: The products of this business area comprise all the instruments and systems required for engine and vehicle testing.</p>
International partners	<p>AVL has technical centres around the world namely Graz, Germany, Slovenia, Croatia, Sweden, Japan, Korea, France, US, Hungary, India, UK, China, Turkey and Brazil.</p>
Topics for cooperation	<ul style="list-style-type: none"> ▪ Manufacturing Processes: Casting, Forging, Sintering, 3D-Printing ▪ Different Heat Treatments and After Treatments ▪ Light Weight Production: Al, Mg, Ti alloys, ADI, Hybrid Materials ▪ Coatings and Surfaces Treatments ▪ Corrosion, Wear and Tribological Characteristics ▪ Welding Processes and other Joining Technologies ▪ Non-Metals: Ceramics, Plastics, Foams, Resins etc.
Contact information	<ul style="list-style-type: none"> ▪ Contact: Dr. Kambiz MEHRABI, kambiz.mehrabi@avl.com Lead Engineer Materials Technology Product Quality Assurance and Production Engineering Engineering and Technology Powertrain Systems Tel.: +43 316 787 7944, M: +43 664 88631832 AVL LIST GMBH, A-8020 Graz, Hans-List-Platz 1 www.avl.com



公司/机构	AVL李斯特公司
研究重点	<p>AVL是全球最大的用于乘用车、卡车和大型发动机的动力系统的开发、模拟和测试（混合动力、燃烧发动机、变速器、电力驱动、电池和软件）独立公司。</p> <p>AVL的业务范围如下：</p> <ul style="list-style-type: none"> ▪ 动力总成系统的开发：AVL开发并改进了各种动力总成系统，是一个在发动机和汽车行业的优秀合作伙伴。 ▪ 模拟：AVL开发和营销开发工作所必需的模拟方法。 ▪ 发动机仪器和测试系统：该业务领域的产品包括发动机和车辆测试所需的仪器和系统的所有产品。
国际合作	<p>AVL在全球，即奥地利格拉茨、德国、斯洛文尼亚、克罗地亚、瑞典、日本、韩国、法国、美国、匈牙利、印度、英国、中国、土耳其和巴西设有技术中心。</p>
合作课题	<p>AVL感兴趣合作的领域包括：</p> <ul style="list-style-type: none"> ▪ 制造工艺：铸造、锻造、烧结、3D打印 ▪ 各种热处理和相继加工 ▪ 轻量生产：铝、镁、钛合金、ADI、混合材料 ▪ 涂层和表面处理 ▪ 腐蚀、磨损和摩擦学特性 ▪ 焊接工艺和其他连接技术 ▪ 非金属：陶瓷、塑料、泡沫、树脂等
联络方式	<ul style="list-style-type: none"> ▪ 联系方式： Dr. Kambiz MEHRABI: kambiz.mehrabi@avl.com Lead Engineer Materials Technology Product Quality Assurance and Production Engineering Engineering and Technology Powertrain Systems 电话: +43 316 787 7944, 手机: +43 664 88631832 AVL LIST GMBH, A-8020 Graz, Hans-List-Platz 1 www.avl.com



Company / Institute	Treibacher Industrie AG
Research focus	<p>Founded in 1898, Treibacher Industrie AG has been a leading global supplier in the chemicals and metallurgy industry for many decades.</p> <p>With its Austrian headquarter in Althofen and subsidiaries in Austria, Germany, Canada, China and Japan and a worldwide sales network, Treibacher supplies products to meet the needs of the global industry in the following business areas:</p> <ul style="list-style-type: none"> ▪ High performance ceramics ▪ Hard metals and energy storage ▪ Rare earths and chemicals ▪ Environmental catalysts and pharmaceutical chemicals ▪ Steel and foundry industry <p>Treibacher Industrie AG develops, produces and sells powders, solutions, granulates and alloys.</p> <p>The company has a strong focus on the development of high performance ceramic powders for structural and functional Ceramics. These powders stand out due to very specific chemical, physical and functional properties.</p> <p>The applications for these ceramic powders range from plasma spray and similar coating technologies for heat and environmental stable coatings on turbines or wear resistant coatings on tools or moving parts.</p> <p>Other research topics are ceramic powders for 3 D printing technologies and powders for structural parts e.g. casings, bio implants and industrial components.</p>
International partners	Treibacher has a number of R&D projects with market leaders in the different fields of application as well as major universities and research institutes.
Topics for cooperation	<p>This fact finding mission should focus on the activities of Chinese top ranked research institutes in the field of high performance ceramics. Treibacher wants to find out if the institutes on the list are active in these fields and if yes what are their competencies and which technical equipment is available.</p> <p>Competencies in the design of ceramic powders regarding composition, shape and resulting outstanding properties.</p>
Contact information	<ul style="list-style-type: none"> ▪ Head of Department and contact: Dr. Alexander BOUVIER, Member of the Board, Alexander.bouvier@treibacher.com Tel.: +43 4262 505 570 Treibacher Industrie AG, Auer-von-Welsbach-Straße 1, 9330 Althofen https://www.treibacher.com/en/



公司/机构	Treibacher 工业集团
研究重点	<p>Treibacher工业集团成立于1898年，近几十年不断发展为全球领先的化学品和冶金工业供应商。其奥地利总部位于Althofen，在奥地利、德国、加拿大、中国和日本设有子公司，拥有全球销售网络。</p> <p>Treibacher提供的产品可满足以下业务领域的全球行业需求：</p> <ul style="list-style-type: none"> ▪ 高性能陶瓷 ▪ 硬质金属和储能 ▪ 稀土和化学品 ▪ 环境催化剂和药物化学品 ▪ 钢铁和铸造业 <p>Treibacher工业集团开发、生产和销售粉末、溶液、颗粒和合金等类型产品。该公司非常注重开发用于结构和功能陶瓷的高性能陶瓷粉末，并因其优异的化学、物理和功能特性脱颖而出。这些陶瓷粉末的应用范围包括等离子喷涂和类似涂层技术，用于涡轮机上的热和环境稳定涂层及工具或移动部件上的耐磨涂层。</p> <p>公司也专注于3D打印技术的陶瓷粉末和用于结构部件的粉末，例如外壳、生物植入物和工业部件。</p>
国际合作	<p>Treibacher拥有多个在研项目，合作伙伴包含在不同的应用领域的市场领导者以及主要大学和研究机构。</p>
合作课题	<p>Treibacher希望了解中国顶尖研究机构在高性能陶瓷领域的研究情况。中方在该领域的科研实力和进展以及所使用的技术设备。</p> <p>公司关注的重点是：陶瓷粉末设计的能力，包括成分、形状和最后达成的高性能。</p>
联络方式	<ul style="list-style-type: none"> ▪ 联络方式： 董事会董事Alexander BOUVIER 博士：Alexander.bouvier@treibacher.com 电话：+43 4262 505 570 Treibacher Industrie AG, Auer-von-Welsbach-Straße 1, 9330 Althofen https://www.treibacher.com/en/



Company / Institute	EPCOS - a Member of TDK Corporation
Research focus	<p>EPCOS OHG, a TDK Group company, in Deutschlandsberg, Austria, employs 900 people and is the competence centre for ceramic components of the Piezo and Protection Devices Business Group. The spectrum of products developed and manufactured extends from piezo actuators, multilayer varistors and sensors to multilayer ceramic modules.</p> <p>EPCOS OHG provides:</p> <ul style="list-style-type: none"> ▪ High-tech electro ceramic components: piezo actuators and sensors, multilayer varistors for overvoltage protection, temperature sensors, PTC thermistors for heating, sensing and overload protection, ceramic ripple suppressors CeraLink™, all solid state ceramic battery CeraCharge™, compact plasma generator CeraPlas™ ▪ Multilayer ceramic modules and substrates in LTCC technology, DSSP packages, LED substrates CeraPad™. ▪ High level of competence and experience in application-oriented design and development of devices, in materials and process development, and in production engineering. ▪ Research and pre-development projects for new products and technologies (e.g. plasma generation with piezo transformers; energy harvesting systems, energy storage devices, sensor elements and systems, electrical protection devices for circuitries, ceramic substrates, ceramic batteries ...) ▪ Applied material research and development for electro-ceramic materials (isolating, dielectric, piezoelectric, ion conductive, semi-conductive ...), metallization and binder systems ▪ Measurement techniques (mechanical, electrical, optical, ...) and finite element simulation
International partners	<p>Broad network of national and international research institutions mainly in Europe (TU Graz, CTR, MCL, Jozef Stephan Institute, Fraunhofer Gesellschaft, ETH Zurich, KIT, ...), Japan (Shimane University) & US (Penn State University) and broad customer base worldwide. Additional parts of the R&D network are cooperation partners and the worldwide TDK R&D centers.</p>
Topics for cooperation	<p>EPCOS is interested in cooperation on the following topics:</p> <ul style="list-style-type: none"> ▪ Research and pre-development projects for new products and technologies (e.g. energy harvesting systems, energy storage devices, sensor elements and systems, electrical protection devices for circuitries, ceramic substrates, ceramic batteries ...) ▪ Applied material research and development for electro-ceramic materials (isolating, dielectric, piezoelectric, ion conductive, semi-conductive ...), metallization and binder systems
Contact information	<ul style="list-style-type: none"> ▪ Contact: Dr. Manfred Schweinzger, manfred.schweinzger@epcos.com DI Markus Puff: markus.puff@epcos.com Vice president Corporate Research and Development PPD CR&D EPCOS OHG, Deutschlandsberg, Austria www.epcos.com, www.global.tdk.com



公司/机构	爱普科斯——TDK集团成员公司
研究重点	<p>爱普科斯做为TDK集团的下属子公司，座落在奥地利德意志兰茨贝格。公司现有900员工，也是集团的压电及保护装置业务单元的技术中心。公司的业务范围包括为多层陶瓷模块开发和生产各种压电促动器、多层压敏电阻和传感器，并提供以下产品和技术：</p> <ul style="list-style-type: none"> ▪ 高性能电子陶瓷部件：为超压保护提供压电促动器和传感器、多层压敏电阻、温度传感器、为加热、感应及过载保护提供正温度系数热敏电阻、陶瓷纹波抑制器CeraLink™、全固态陶瓷电池CeraCharge™ 以及小型等离子发生器CeraPad™。 ▪ 应用在低温共烧陶瓷技术（LTCC）、模具尺寸SAW封装（DSSP）、LED基板CeraPad™上的多层陶瓷模块和基板。 ▪ 为面向应用的设备设计和开发、材料和工艺开发以及生产工程方面具有高水平的能力和经验 ▪ 针对新产品和技术的研究和预开发项目（例如压电变压器的等离子发生器、能量收集系统、储能装置、传感器元件和系统、运用于电路、陶瓷基板、陶瓷电池等的用电气保护装置） ▪ 电陶瓷材料（绝缘、电介质、压电、离子导电、半导电等），金属化和粘合剂系统的应用材料研究和开发 ▪ 测量技术（机械、电气、光学等）和有限元模拟
国际合作	<p>公司拥有主要位于欧洲（格拉茨技术大学、CTR，MCL，Jozef Stephan研究所，弗劳恩霍夫研究院、苏黎世联邦理工学院、卡尔斯鲁厄工业大学等）、日本（岛根大学）和美国（宾夕法尼亚州立大学）的国家和国际研究机构网络和广泛全球客户群。研发网络的其他组成部分是其他合作伙伴和位于全球的TDK研发中心。</p>
合作课题	<p>爱普科斯感兴趣合作的课题包括：</p> <ul style="list-style-type: none"> ▪ 新产品和技术的研究和预开发项目（例如能量收集系统、储能装置、传感器元件和系统、电路、陶瓷基板、陶瓷电池等用电气保护装置）。 ▪ 电陶瓷材料（绝缘、电介质、压电、离子导电、半导电等），金属化和粘合剂系统的应用材料研究和开发合作也是爱普科斯感兴趣的内容。
联络方式	<ul style="list-style-type: none"> ▪ 联络方式： 企业研发副总裁 Manfred Schweinzger博士：manfred.schweinzger@epcos.com DI Markus Puff：markus.puff@epcos.com PPD CR&D EPCOS OHG, Deutschlandsberg, Austria www.epcos.com, www.global.tdk.com



Company / Institute	GETec Microscopy Ltd.
Research focus	GETec Microscopy Ltd is a high-tech start-up focusing on developing of special atomic force microscopes (AFM) dedicated to a seamless integration into other host systems such as scanning electron (SEM) or dual-beam microscopes (SEM/FIB). The modular AFM concept is based on "all electric cantilevers" with integrated sub-micrometer strain sensors allowing a very compact design (AFSEM™, www.getec-afm.com). No optical read-out module limits the access, e.g., of the electron beam to the sample spot of interest. Therefore, correlated in-situ SEM & EDX & AFM analysis of exactly the same sample spot can be performed almost simultaneously.
International partners	<p>The leading-edge development of new products has been successfully supported by cooperating in national and international research projects:</p> <ul style="list-style-type: none"> ▪ Project coordinator for Eurostars project "TRIPLE-S ": In cooperation with the R&D partners Center for Electron Microscopy in Graz (Austria) and EPFL in Lausanne (Switzerland) the project fuses together three of the most powerful high-resolution microscopes (SEM, FIB, AFM) ▪ Project coordinator in the international research project Production of the future: "SENTINEL". In co-operation with University of Graz (Austria) and Chinese Academy of Sciences this project has the goal to develop novel conductive and scanning thermal nano-probes for usage in high-vacuum ▪ Project coordinator in the international research project Production of the future: "ICON". In co-operation with Donau University Krems (Austria) and Shanghai Institute of Ceramics this project aims at the development of an entirely new class of characterization tools for the study of ceramic ZrO₂ coatings by combining AFM/SEM/EBSD
Topics for cooperation	<p>GETec is interested in cooperation on the following topics:</p> <ul style="list-style-type: none"> ▪ R&D where AFM functionality has to be integrated into other instruments (especially SEM): Based on a compact modular AFM system using self-sensing cantilevers, GETec can provide custom-made AFM systems for the seamless integration into standard commercial SEM / Dual-beam systems. ▪ New solutions for material, surface and process analysis: Nano-probing (e.g. topography, electrical conductivity, mechanical and thermal properties) of complex samples in air and vacuum.
Contact information	<ul style="list-style-type: none"> ▪ Head of Unit: Dr. Ernest J. FANTNER: ernest.fantner@getec-afm.com ▪ Contact: Tel.: +43 6643 937743 A-3550 Langenlois, Dechantstrasse 9, Austria www.getec-afm.com



公司/机构	GETec显微镜有限公司
研究重点	<p>GETec显微镜有限公司，是一家高科技新兴企业，致力于开发特殊的原子力显微镜（AFM），可以无缝整合入其它的主系统，例如扫描电子显微镜系统（SEM）。模块化的AFM单元理念基于结合亚微米应变传感器可以达成紧凑设计的“全悬臂”（AFSEM™，www.getec-afm.com）。光学读出模块不会限制例如电子束与样本标的点之间的接入。因此，同一个样本标折点的相关相关原位置SEM & EDX & AFM分析可以几乎同时进行。</p>
国际合作	<p>新产品的前沿开发得到了成功的国内与国际合作研究项目的大力支持：</p> <ul style="list-style-type: none"> ▪ 欧洲EUROSTAR经费资助的项目TRIPLE-S的项目协调人：项目合作方包括格拉茨电子显微中心（奥地利）和位于瑞士洛桑的瑞士联邦理工学院（EPFL）等研发伙伴。该项目将三种最为强大的高分辨率显微镜（SEM、FIB、AFM）融合 ▪ 关于未来生产的国际科研合作项目SENTINEL的项目协调人：与格拉茨大学（奥地利）和中国科学院合作，目标是开发在高真空环境应用的新型导电与扫描热纳米探针（如SEM和TEM）。 ▪ 在国际研究项目未来制造ICON作为项目协调人。与Krems多瑙大学及上海陶瓷研究所一起合作，该项目瞄准于开发出全新等级的结合AFM/SEM/EBSD方法的用于表征陶瓷二氧化锆涂层的工具。
合作课题	<p>GETec感兴趣合作的课题包括：</p> <ul style="list-style-type: none"> ▪ 将AFM功能化与其它仪器（特别是SEM）的研发：基于使用自感应悬臂的紧凑AFM系统模块，GETec能提供定制的无缝接入标准商业SEM系统的AFM系统。 ▪ 材料与加工分析的新型解决方案：复杂样品在空气或真空环境中的纳米级探知（如地形、传导性、热性能等）。
联络方式	<ul style="list-style-type: none"> ▪ 部门负责人： Ernest J. FANTNER博士：ernest.fantner@getec-afm.com ▪ 联络方式： 电话：+43 6643 937743 A-3550 Langenlois, Dechantstrasse 9, Austria www.getec-afm.com



Company / Institute	INOCON Technologie
Research focus	<p>INOCON Technologie GmbH holds numerous patents in the field of plasma welding and brazing as well as atmospheric plasma coating.</p> <p>This competence has recently been extended by the very successful research in the field of novel plasma coating technologies. INOCON Technologie GmbH runs a series of FFG (Austrian Research Promotion Agency) and Eurostars (Funding of EUREKA and the European Commission) research projects that develop atmospheric plasma applications for coating, activation and welding.</p> <p>A sub-field thereof is the application of atmospheric processes instead of PVD (physical vapour deposition) processes or CVD (chemical vapour deposition) processes, which are at a fraction of the investment costs compared to the vacuum process in use till now, and, in particular, have high automation capability.</p> <p>We were rewarded with the "Innovation price 2017" for our excellent projects.</p>
International partners	<ul style="list-style-type: none"> ▪ Fraunhofer Göttingen ▪ Innovent Jena ▪ Tsinghua University Beijing
Topics for cooperation	<p>Inocon is interested in cooperation on the following topics:</p> <p>Atmospheric Plasma Coating Applications:</p> <ul style="list-style-type: none"> ▪ Conductive layers ▪ Nano layers (hydrophilic – adhesion improvement, hydrophobic - non adhesive properties) ▪ Corrosion protection layers ▪ Biocidal layers ▪ Tribological layers ▪ Thermal barrier layers ▪ Activation of plastic and metal substrates <p>Plasmatron welding & brazing Applications:</p> <ul style="list-style-type: none"> ▪ Brazing of galvanized sheets ▪ Steel welding ▪ Stainless steel & aluminium welding ▪ Copper sheet & pin welding ▪ Advantages: ▪ High speed ▪ No sputter ▪ High gap bridgeability
Contact information	<ul style="list-style-type: none"> ▪ Contact: Dr. Friedrich Pesendorfer, CEO, f.pesendorfer@inocon.at T: +43 7674 62526-20 M: +43 664 10 16 341 INOCON Technologie GmbH Wiener Straße 3, 4800 Attnang-Puchheim, Austria https://www.inocon.at/en/



公司/机构	INOCON 技术有限公司
研究重点	INOCON技术有限公司在等离子焊接和钎焊以及大气等离子涂层领域拥有多项专利，并在近期将这种优势扩大到新型等离子涂层技术领域。 INOCON技术有限公司承接一系列FFG（奥地利研究促进署）和欧洲之星（EUREKA和欧洲委员会的资助）资助的科研项目，开发用于涂层、活化和焊接的大气等离子体应用。其子领域是应用大气工艺流程代替PVD（物理气相沉积）过程或CVD（化学气相沉积）工艺。与当前使用的真空工艺相比，其投资成本更低，且具有很高的自动化能力。我们的优秀项目获得了“2017年创新奖”。
国际合作	<ul style="list-style-type: none"> ▪ 哥廷根德国弗劳恩霍夫研究所 ▪ 德国耶拿Innovent ▪ 清华大学
合作课题	INOCON技术有兴趣合作的课题包括： 大气等离子涂层 应用： <ul style="list-style-type: none"> ▪ 导电层 ▪ 纳米层（亲水 - 粘合性改善，疏水 - 非粘合性） ▪ 防腐蚀层 ▪ 杀生物层 ▪ 摩擦层 ▪ 隔热层 ▪ 激活塑料和金属基材 等离子管焊接和钎焊 应用： <ul style="list-style-type: none"> ▪ 镀锌板的钎焊 ▪ 钢焊接 ▪ 不锈钢和铝焊接 ▪ 铜板和钎焊 优点：高速、无溅射、高差距桥接性
联络方式	<ul style="list-style-type: none"> ▪ 联络方式： Friedrich PESENDORFER 博士、 总裁: f.pesendorfer@inocon.at 电话: +43 7674 62526-20 手机: +43 664 10 16 341 INOCON Technologie GmbH Wiener Straße 3, 4800 Attnang-Puchheim, Austria https://www.inocon.at/en/



Company / Institute	RHP-Technology GmbH
Research focus	<p>RHP-Technology GmbH was started as a group of researchers in 1996 and founded as a company in 2010 with a wide range of knowledge and experience in material development based on powder technology.</p> <p>Our research interest is in functional and smart materials. We are tuning material properties designed to our customer's needs. This includes magnetic properties, optical properties, tribologic properties, hardness, thermal conductivity, electrical conductivity, mechanical properties and many more. Technologies we operate are hot pressing, spark plasma sintering, fast sintering, rapid sinter pressing, additive manufacturing, CNC 3D printing, ceramic injection moulding, metal injection molding, shape welding and XXL printing of large parts using robots and multi-axis systems.</p> <p>We realize material inserts, multi-materials and bi-metallic components etc. Our branches we are delivering products, research and development to are: space, aeronautics, optics, medical-technologies, heavy industry, sensor technologies, luxury goods, jewellery, satellite technologies, pharmaceutical and display industry among others.</p>
International partners	<p>We are looking for Industrial cooperations and Research Institutions to boost innovative products using new materials (ceramics and metals and composites) with outstanding and customized physical properties.</p>
Topics for cooperation	<ul style="list-style-type: none"> ▪ RHP-Technology GmbH is always looking for powder suppliers (metal and ceramic, oxides, nitrides, borides, carbides) ▪ Technological and R&D collaborations ▪ Space/satellite equipment and smart solutions for propulsion systems (nanosats, cubesats, minisats) ▪ Thin film industry to supply with sputtering targets for new functional layers ▪ Applications with needs for new material properties ▪ High thermal conductive materials ▪ High hardness materials ▪ 3d Printing of hard metals, cermets, ceramics...
Contact information	<ul style="list-style-type: none"> ▪ CEO: DI Michael KITZMANTEL: michael.kitzmantel@rhp-technology.com ▪ Contact: Tel.: +43 2255 20600 RHP-Technology GmbH, Forschungszentrum, 2444 Seibersdorf, Austria www.rhp-technology.com, www.at-space.com



公司/机构	RHP技术有限责任公司
研究重点	<p>RHP技术有限责任公司最初在1996年由研究团队策划，于2010年正式成立。现已发展成拥有基于粉末技术的材料开发方面的广泛知识和经验的先进企业。</p> <p>公司的研究方向是功能性和智能材料。 公司可以根据客户需求调整材料属性。 这包括磁性、光学性质、摩擦学性能、硬度、导热性、导电性、机械性能等等。公司的经营的技术包括热压、放电等离子烧结、快速烧结、快速烧结压制、增材制造、CNC 3D打印、陶瓷注射成型、金属注射成型、形状焊接以及使用机器人和多轴系统对大型零件进行XXL打印。</p> <p>公司现可实现材料嵌入，多材料和双金属元件等项目。我们为如下行业提供产品、研究和开发：空间、航空、光学、医疗技术、重工业、传感器技术、奢侈品、珠宝、卫星技术、制药和显示器等行业。</p>
国际合作	<p>公司现阶段寻找研究院所及工业上的合作伙伴，以求开发出具有优异并可定制物理特性的创新材料产品。</p>
合作课题	<ul style="list-style-type: none"> ▪ 我们一直在寻找粉末供应商（金属和陶瓷、氧化物、氮化物、硼化物、碳化物） ▪ 技术和研发合作 ▪ 空间/卫星设备和用于推进系统的智能解决方案（纳米卫星、立方卫星、小型卫星等）为薄膜工业开发新功能层提供溅射靶材 ▪ 具有新材料属性的应用 ▪ 高导热材料高硬度材料 ▪ 3D印刷硬质合金、金属陶瓷、陶瓷等
联络方式	<ul style="list-style-type: none"> ▪ CEO Michael KITZMANTEL: michael.kitzmantel@rhp-technology.com ▪ 联络方式: 电话: +43 2255 20600 RHP-Technology GmbH, Forschungszentrum, 2444 Seibersdorf, Austria www.rhp-technology.com www.at-space.com

Company / Institute	IMR metal powder technologies GmbH IMR Fabrikautomation GmbH
Research focus	<p>IMR metal powder technologies GmbH: is a Family company founded in 1986 in 9220 Velden Austria (EU).</p> <p>Based on the experience and ideas of the founder Dr.DI.Karl RIMMER he started trading with Zink and Lead and other Non Fereous Metals and Concentrates. In the meantime we are producing Nonferous Metals and started 2 years ago in the field of Aluminium metal powder for Additive Manufacturing where we are now one of a handful European Producer for AM Aluminium alloy powder in a production size of appx. 2000 mt.p.a. crude powder.</p> <p>We test and control the product quality in our own laboratory and developing with our customer R&D projects. Our development depend on the future development of 3-D Printing Systems. Our strategy is focused on the European Asian and American markets for Automotive, Aircraft, Space, and General Printing Service Industry.</p> <p>IMR Fabrikautomation GmbH:</p> <p>This Company was taken over in1994 with the production range. (industrial washing machines, linear robotics, conveying ...) In another companies of the IMR Technologies Group is engineering producing machine for automatization in connecting with robitic, digital vision, and is in the beginning to develop a 3-D Printing Robot for large parts for different filaments (metal powder containing filamants and other).</p>
International partners	<p>Our holding IMR technology Group GmbH and technical center is in Velden am Wörthersee (Austria).</p> <p>We have software companies in Banja Luka (Bosnia Herzogovina) Zagreb (Croatia) and Jakarta (Indonesia). Trading office for Raw Material in Frankfurt (Germany).</p> <p>We are trading also mainly in Europe and worldwide in different NFM-Products.</p>
Topics for cooperation	<p>IMR is interested in cooperation on the following topics:</p> <ul style="list-style-type: none"> ▪ Aluminium Alloys especially for Additive Manufacturing ▪ Heat treatment for AM Aluminium Alloys ▪ Automatization of process steps for the process after 3 D printing process like cleaning, automatization for recycling of metal powder (transportation, cleaning screening etc. ▪ Filament production with metal powder, heat treatment- and sintering processes and similar activities in this product field. ▪ 3 D printing with articulated robots with laser layer welding and filament printing for large printed of Aluminium parts.
Contact information	<ul style="list-style-type: none"> ▪ Head of Unit: Dr. Karl RIMMER: karl.rimmer@imr.co.at ▪ Contact: T: +43 4274 4100, M: +43 664 1980 700 IMR Technology Group GmbH, A-9220 Velden am Wörthersee Jessenigstrasse 4 www.imr-group.com

公司/机构	<p>IMR金属粉末技术有限公司</p> <p>IMR 机床自动化有限公司</p>
研究重点	<p>IMR金属粉末技术有限公司</p> <p>是一家由Karl RIMMER博士在1986年创立的家族企业，坐落于Velden Austria（EU）。公司最早的业务是进行锌和铅以及其他有色金属和精矿的交易，并逐渐发展有色金属制造商。公司在2年前开始生产用于增材制造的铝金属粉末，现在公司是欧洲为数不多的增材制造铝合金粉末产商之一，年生产规模为2000 吨粗粉。公司在自己的实验室中测试和控制产品质量，并跟我们的客户一起开展研发项目。公司的发展跟3D打印系统的未来发展息息相关。公司的战略重点是欧洲、亚洲和美洲市场的汽车、飞机、航天和通用印刷服务行业。</p> <p>IMR 机床自动化有限公司</p> <p>该公司于1994年被收购，公司的产品范围包括工业洗衣机、线性机器人、输送等。</p> <p>作为IMR技术集团的子公司，该公司是生产与机器人、数字视觉的自动化相关的自动化工程机械，并且开始研发用于不同长丝（含有丝状物和其他金属粉末）打印大型部件的3D打印机机器人。</p>
国际合作	<ul style="list-style-type: none"> ▪ 公司的控股IMR技术集团有限公司和位于奥地利Velden am Wörthersee技术中心。 ▪ 公司在Banja Luka（波斯尼亚黑塞哥维那）萨格勒布（克罗地亚）和雅加达（印度尼西亚）有软件公司。 ▪ 德国法兰克福原料贸易办事处 ▪ 公司主要在欧洲和全球范围内交易不同的有色金属产品
合作课题	<p>IMR感兴趣合作的课题包括：</p> <ul style="list-style-type: none"> ▪ 铝合金，特别是适用于增材制造的品种 ▪ 增材制造铝合金的热处理 ▪ 3D打印后工艺流程步骤自动化，如清洗、金属粉末回收自动化（运输、清洁筛选等）。 ▪ 采用金属粉末生产长丝，热处理和烧结工艺以及该产品领域的类似活动。 ▪ 带激光层焊接3D打印铰接式机器人和适用于大型铝合金印刷部件的长丝印刷。
联络方式	<ul style="list-style-type: none"> ▪ 部门负责人： Karl RIMMER博士：karl.rimmer@imr.co.at ▪ 联络方式： 电话：+43 4274 4100 手机：+43 664 1980 700 ▪ IMR Technology Group GmbH, A-9220 Velden am Wörthersee Jessenigstrasse 4 www.imr-group.com



Company / Institute	Cubicure GmbH
Research focus	Cubicure specializes on the research and development of high-performance photopolymer substances and formulations for additive manufacturing applications. To reach this goal, Cubicure developed the Hot Lithography 3D-Printing technology which enables the use of high viscous oligomers for precise lithographic printing purposes. Cubicure develops additive lithographic printing systems for industrial production or R&D purposes and provides a series of high performance photopolymers. These photopolymer formulations – customized or series products – are setting new benchmarks in temperature resistance and/or impact toughness when compared to state-of-the-art photopolymer formulations. In fact, Cubicure’s Hot Lithography technology for the first time combines high-precision 3D-printing with sophisticated polymer material properties for technical use.
International partners	<ul style="list-style-type: none"> ▪ AM Ventures Holding ▪ Jabil ▪ Buzek Plastics ▪ Rosenberger
Topics for cooperation	<p>Cubicure GmbH is interested in cooperation on the following topics:</p> <ul style="list-style-type: none"> ▪ innovative additive manufacturing technology for R&D, functional prototyping, pre-series or series production of typical micro-molding polymer parts. ▪ Cooperation potential in the field of photopolymer research and development.
Contact information	<ul style="list-style-type: none"> ▪ Contact: Dr. Christian GORSCHER: christian.gorsche@cubicure.com Dr. Markus PFAFFINGER (Business Development): office@cubicure.com Tel.: +43 1 5810439 10 Gutheil-Schoder-Gasse 17, Tech Park Vienna, 1230 Wien, Austria http://www.cubicure.com/



公司/机构	Cubicure 有限责任公司
研究重点	Cubicure公司专注于高性能光敏聚合物物质的开发及增材制造应用的解决方案。公司开发了例如热光刻3D打印技术，该技术能使用高粘滞低聚体进行精确光刻打印。公司正在为工业生产及研发开发增材光刻打印系统，该系统能生产出一系列的高性能光敏聚合物。这些来自公司的定制或批量生产的光敏聚合物的配方在最新的光敏聚合物设置了新的抗热和抗冲击强度的基准。事实上，公司的热光刻技术是第一种针对实际技术应用所开发的结合了高精度3D打印和复杂聚合物材料特性的技术。
国际合作	<ul style="list-style-type: none"> ▪ AM Ventures Holding ▪ Jabil ▪ Buzek Plastics ▪ Rosenberger
合作课题	<p>Cubicure有限责任公司有兴趣合作的项目包括：</p> <ul style="list-style-type: none"> ▪ 开发创新的增材创新技术能应用于微成型聚合物部件的研发、功能原形制造、试生产及批量生产。 ▪ 在光敏聚合物方向的研发。
联络方式	<ul style="list-style-type: none"> ▪ 联络方式： Christian GORSCHER博士： christian.gorsche@cubicure.com Markus PFAFFINGER博士（市场开发）： office@cubicure.com 电话： +43 1 5810439 10 Gutheil-Schoder-Gasse 17, Tech Park Vienna, 1230 Wien, Austria http://www.cubicure.com/



Company / Institute	Plasmo Industrietechnik GmbH
Research focus	Plasmo is one of the market leaders in the field of quality assurance systems for laser processes. These systems are developed and manufactured in Hardware and Software by plasmo and used in the field of Automotive industry steel industry and additive manufacturing like powder bed and direct energy deposition. Focus and core knowledge of development is handling of sensors data and development of algorithm for real time analysing in production lines. These systems are used for failure detection and process development as well as tool for knowledge transfer from machine to machine or plant to plant.
International partners	Plasmo has branches in Stuttgart (Germany), Detroit (USA) and is working with Universities in Austria and Germany and other European countries.
Topics for cooperation	Plasmo is interested in cooperation on the following topics: <ul style="list-style-type: none"> ▪ Welding Processes and other Joining Technologies ▪ Laser processes ▪ 3D Printing, DED ▪ Sensors for QS Systems
Contact information	<ul style="list-style-type: none"> ▪ Head of Department and contact: Arnold BRAUNSTEINER: arnold.braunsteiner@plasmo.eu Plasmo Industrietechnik GmbH, Dresdner Strasse 81-85, 1200 Wien, Austria www.plasmo.eu



公司/机构	Plasmo 工业技术有限公司
研究重点	Plasmo是激光加工质量保证系统领域的市场领导者之一。 这些系统经由使用plasmo的硬件和软件所开发和制造，并用于汽车工业钢铁工业和增材制造领域，如粉末层和直接能量沉积。 开发的重点和核心知识是处理传感器数据和开发算法，以便在生产线上进行实时分析。 这些系统用于故障检测和工艺开发，以及用做机器到机器或从工厂到工厂的知识转移的工具。
国际合作	Plasmo在斯图加特（德国）、底特律（美国）开设了分公司，并与奥地利、德国和其他欧洲国家的大学合作。
合作课题	<p>Plasmo感兴趣合作的课题包括：</p> <ul style="list-style-type: none"> ▪ 焊接工艺和其他连接技术 ▪ 激光加工 ▪ 3D打印，直接能量沉积 ▪ QS系统传感器
联络方式	<ul style="list-style-type: none"> ▪ 联络人： Arnold BRAUNSTEINER: arnold.braunsteiner@plasmo.eu Plasmo Industrietechnik GmbH, Dresdner Strasse 81-85, 1200 Wien, Austria www.plasmo.eu



Company / Institute	Andreas Stihl AG & Company KG
Research focus	<p>STIHL is a private held German manufacturer of chainsaws and other handheld power equipment including trimmers and blowers, with it's headquarter in Waiblingen, Germany. STIHL was founded in 1926 by Andreas Stihl and is now world's bestselling brand of chain saws. STIHL began to sell in Austria back in 1937 and in 1971 STIHL established their subsidiary in Austria.</p> <p>For power tool lightweight design is the most important challenge.</p> <p>Beside that Environmentally friendly materials are of special interest, e.g. biodegradable trimmer lines, bio-based plastics and alternative fuels.</p> <p>Of increasing importance are alternative topics around battery technology and fuel cells.</p>
International partners	<ul style="list-style-type: none"> ▪ ANDREAS STIHL Power Tools Co., Ltd. Shandong, China ▪ STIHL Tirol GmbH, Langkampfen/Kufstein, Austria
Topics for cooperation	<p>The company is interested in cooperation on the following topics:</p> <ul style="list-style-type: none"> ▪ Weight reduction in general, e.g. new magnesium alloys with higher strength and ductility ▪ Low cost CFK materials and cost reducing processing technologies ▪ Biodegradability of technical plastics ▪ Low temperature battery technology for outdoor application ▪ Tribology of piston/liner setting, as substitute for chromium plating ▪ Measurement of the oil film thickness in small two cycle engines
Contact information	<ul style="list-style-type: none"> ▪ Head of Department and contact: Dr. Roland SCHIERLING, roland.schierling@stihl.de Tel.: (0 71 51) 26-2365 Andreas-Stihl-Straße 4, 71336 Waiblingen, Germany



公司/机构	安德烈斯蒂尔集团
研究重点	<p>STIHL是一家私人的电锯和其他手持动力设备制造商，其产品包括修剪机和鼓风机，公司的总部位于德国Waiblingen。</p> <p>STIHL由Andreas Stihl于1926年创立，现在是世界上最畅销的链锯品牌。STIHL于1937年开始在奥地利销售，1971年，STIHL在奥地利设立了子公司。</p> <p>对于电动工具而言，轻量化设计是最重要的挑战。</p> <p>除此之外环保材料的应用也是对于公司有特别的意义。公司已经使用例如，可生物降解的修剪线，生物基塑料和替代燃料等用于他们的产品上。</p> <p>现阶段越来越重要的主题是围绕替代现有电池技术和燃料电池的研究。</p>
国际合作	<ul style="list-style-type: none"> ▪ 安德烈斯蒂尔电动工具有限公司 ▪ 奥地利STIHL Tirol GmbH
合作课题	<p>安德烈斯蒂尔集团有兴趣合作的课题包括：</p> <ul style="list-style-type: none"> ▪ 常规减量，例如应用新型镁合金使工具具有更高的强度和延展性 ▪ 低成本CFK材料和降低成本的加工技术 ▪ 工业塑料的生物降解性 ▪ 适用于户外应用的低温电池技术 ▪ 活塞/衬垫设置的摩擦学，作为镀铬的替代品 ▪ 测量小型双循环发动机中的油膜厚度
联络方式	<ul style="list-style-type: none"> ▪ 联络方式： Roland SCHIERLING博士：roland.schierling@stihl.de 电话：(0 71 51) 26-2365 Andreas-Stihl-Straße 4, 71336 Waiblingen, Germany



Company / Institute	K1-MET GmbH
Research focus	<p>K1-MET is a metallurgical competence center for technical and environmental process development. The research activities within K1-MET consist of four areas. Area 1 is called “Resources and Recycling” and is focused on the characterization of raw materials for ironmaking such as sinter and reducing agents and on the treatment of metallurgical residuals (dusts and slags from the basic oxygen furnace process).</p> <p>Area 2 is called “High Temperature Metallurgy” with the focus on an optimized converter steelmaking process as well as regarding the influence of hot liquid metal melts on refractory materials.</p> <p>Area 3, “Processing and Energy Performance” is targeted on two main aspects. First, the continuous casting process is considered. Alternative mold slag powders as well as the influence of the secondary cooling zone on steel slab surface quality are investigated. The second part deals with energy systems. Within this thematic issue, heat recovery solutions, optimized efficiency of combustion and industrial furnace systems as well as low carbon energy systems are within the focus.</p> <p>The fourth research area is called “Modelling and Simulation” and investigates single and multi-phase phenomena in metallurgical plants and processes. Different time and size scales are considered with implemented particle reaction kinetics in metallurgical ironmaking facilities such as the blast furnace and direct reduction reactors. Furthermore, flowsheeting-based process simulations of single metallurgical plants as well as entire integrated routes are executed.</p>
International partners	<ul style="list-style-type: none"> ▪ Centre de Recherches Métallurgiques (Belgium) ▪ FEhS Institut für Baustoffforschung (Germany) ▪ POSCO Pohang Iron and Steel Company (South Korea) ▪ Rina Consulting - Centro Sviluppo Materiali (Italy) ▪ Swerea MEFOS (Sweden) ▪ Technische Universität Bergakademie Freiberg (Germany) ▪ VDEh Betriebsforschungsinstitut (Germany) ▪ Several other scientific and industrial partners from European funded projects
Topics for cooperation	<p>One important research topic within K1-MET is targeted on the investigation of low carbon steelmaking solutions using hydrogen. K1-MET is partner in Austrian and European funded research projects dealing with this topic.</p> <p>Beside this, K1-MET is highly motivated to start cooperation's with international institutions regarding possible research exchange programs. Outgoing research stays i.e. K1-MET staff visit external institutions are of interest as well as incoming research stays, where international scientists can get the chance to stay at K1-MET for research activities.</p>
Contact information	<ul style="list-style-type: none"> ▪ contact: Dr. Johannes RIEGER, johannes.rieger@k1-met.com Tel.:+43 3842 402 2280, Mobile: +43 664 88 32 2499 K1-MET GmbH, Stahlstraße 14, 4020 Linz, Austria www.k1-met.com



公司/机构	K1-MET 有限公司
研究重点	<p>K1-MET 有限公司是一个着眼于技术和环境流程开发的冶金能力中心。K1-MET内的研究活动包括四个领域。</p> <p>领域1“资源和回收”：其重点是烧结和还原剂等炼铁原料的表征以及冶金残渣（来自基本氧化加工过程中的粉尘和炉渣）的处理。</p> <p>领域2“高温冶金”：其重点是优化的转炉炼钢工艺以及热液态金属熔体对耐火材料的影响。</p> <p>领域3“加工和能源功效”：主要针对两个主要方面。首先，持续铸造过程被纳入考量中。研究了替代模具矿渣粉末以及二次冷却区对钢板表面质量的影响。第二部分涉及能源系统。在这个区块中，热回收解决方案，优化的燃烧效率和工业炉系统以及低碳能量系统都是重点研究方向。</p> <p>领域4“建模和模拟”：研究冶金工厂和工艺中的单相和多相现象。在冶金炼铁设施如鼓风炉和直接还原反应器中，实施的颗粒反应动力学考虑了不同的时间和尺寸。此外，公司也制定单个冶金设备的基于流程图的过程模拟以及整个集成路线。</p>
国际合作	<ul style="list-style-type: none"> ▪ Centre de Recherches Métallurgiques（比利时） ▪ FEhS Institut für Baustoffforschung（德国） ▪ POSCO浦项钢铁公司（韩国） ▪ Rina Consulting - Centro Sviluppo Materiali（意大利） ▪ Swerea MEFOS（瑞典） ▪ Technische Universität Bergakademie Freiberg（德国） ▪ VDEh Betriebsforschungsinstitut（德国） ▪ 及来自欧洲资助项目下的其他科学和工业合作伙伴
合作课题	<p>K1-MET中的一个重要研究课题是针对使用氢气的低碳炼钢解决方案的研究。K1-MET是奥地利和欧洲资助的研究项目的合作伙伴。除此之外，K1-MET非常积极地与国际机构就可能的研究交流计划开展合作。外派本公司的人员和接受来自其他单位的研究人员</p>
联络方式	<ul style="list-style-type: none"> ▪ 联络方式： 资源和回收区域经理：Johannes Rieger博士， johannes.rieger@k1-met.com 电话：+43 3842 402 2280， Mobile: +43 664 88 32 2499 K1-MET GmbH, Stahlstraße 14, 4020 Linz, Austria www.k1-met.com



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