OUR PORTFOLIO

Our services at a glance

- Analysis and characterization of valuable and pollutants in secondary raw materials and waste waters
- Development and optimization of recycling strategies
- Mechanoschemical processing of mineral residuals
- Design of microbial and chemical leaching and precipitation processes
- Synthesis of adsorptive materials
- Biotechnological separation or elimination of substances from liquid media
- Exploration of bio-based by-products for a substitution of mineral oil-based materials
- Design of processes for the reprocessing of fibres and termo-solutions for bio-based materials, paints, textiles
- Enzymatic processing of bio-based residuals
- Development of biodegradable coatings for controlled release fertilizers

Technical equipment

- High-resolution light and electron microscopy (REM, EDX)
- X-ray diffraction (with high temperature measurement)
- Raman spectroscopy
- Elemental analysis (ICP-MS, ICP-OES, WDXRF)
- Spectroscopy (FT-IR, UV-VIS)
- Chromatography (GC, HPLC, IC)
- Thermogravimetry (TGA, DSC, ML, DTA)
- H2, O2, N2, C, S and Hg analysis
- Surface and pore analysis (BET)
- Particle size analysis (10 nm up to 30 mm)
- Static and dynamic fibre analysis

BIOGENIC SYSTEMS

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BIO-BASED RAW MATERIALS

Background
The increasing use of bio-based raw materials in various sectors in the industry provides access to the growth markets. The utilisation of these materials is increasingly limited to an emergency use and comprises bio-composite materials, cellulose-based polymers including nanocellulose and bio-wastes of the 3rd generation. The sources for bio-based raw materials are vegetable wastes from the food industry and agriculture. But also crops are grown especially for technical use. Keys for a successful use are the isolation, reprocessing of and a quality management for the relevant raw materials.

Year challenges
• High requirements on quality for the raw materials
• In most cases bio-based raw materials have to be isolated and reprocessed from a surrounding matrix
• Handling of secondary reaction products
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POLLUTANT REMOVAL AND RECOVERY OF NUTRIENTS

Background
Running short resources and accompanying rise in prices increase the part of raw material costs of a product. Therefore technologies and strategies for an efficient use of raw materials in industrial processes become more and more important possible saving. Also it’s industrial processes and on chemical compounds used, the requirements in ecological harmlessness are of growing importance. For an optimisation of the resource efficiency it is not sufficient to recover valuable resources but also to minimise and reprocess potential secondary waste.

Year challenges
• High volumes of media that have to be treated
• Determination of economic and easy available raw materials
• Simple and robust production processes with broad variation possibilities
• Multiple use of the same adsorption material due to desorption
• Separation and recovery of minor concentration of pollutants and valuable elements and compounds

Our solutions
• Optimisation of processes for the treatment of waste water, process water, slurges and ashes
• Wet chemical dissolution and precipitation processes
• Development of particle based adsorption systems for organic and inorganic elements or compounds
• Selective separation even of traces and reversible description

Year advantages
• Avoidance of harmful chemicals
• Determination of economic and easy available raw materials
• Simple and robust production processes with broad variation possibilities
• Multiple use of the same adsorption material due to desorption
• Separation and recovery of minor concentration of pollutants and valuable elements and compounds

NUTRIENT RECYCLING CONCEPTS

Background
Most of the phosphates that are mined end up as fertilisers in agriculture but they also play an important role in preserving minerals or farm fertiliser into surface and ground water where they cause environmental problems.

Your challenges
• Different determining conditions in the periphery of the recycling plants
• Different regional requirements for a recycling strategy
• Different regulations for a recycling strategy

Our solutions
• Evaluation and characterisation of recycling products according relevant ordinances
• Analysis of process and waste waters, slurges, ashes, farm fertiliser and secondary raw materials
• Establishment of sustainable technologies
• Support during the transfer of ideas into a large scale production
• Avoidance of harmful chemicals
• Development of innovative materials and products
• Saving due to reduced disposal costs
• Via WfS access to a multiplicity of stakeholders and networks

Your advantages
• Establishment of sustainable technologies
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