

## RESEARCH FOR EFFICIENT USE OF RESOURCES TECHNICAL AND STRATEGIC SOLUTIONS

We look forward to a successful  
collaboration with you!

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# EXPERTS FOR RESOURCE STRATEGY AND RECYCLING TECHNOLOGY.

## USE, DON'T USE UP

### Overview

The scarcity of resources is a major topic in the economic and social development of industrialised nations. That's why we want to improve resource and energy efficiency wherever possible. This includes an optimised allocation (of resources). We focus on this future-oriented task through research and development on new recycling technologies and substitutes for scarce raw materials and materials. Our goal is to make materials and valuable substances recyclable.

In close collaboration with our partners, we develop innovative separation and sorting methods, treatment procedures as well as new resource-efficient products that secure a technological advance for our customers.

Cutting-edge scientific and technological knowledge is realized in sustainable applications and products customised for best economic and technical viability.

Our core competencies are concentrated in three business divisions:

- Secondary Materials
- Functional Materials
- Material Flow Management

### Material Flow Management

With the subject Material Flow Management we identify quantitative and qualitative factors of primary and secondary resources for present and future technology development. Their availability in the whole process of the production by raw materials, her use and postuse are evaluated. The resource strategy draught defines criteria to the evaluation of potentials and risks concerning the application of raw materials, materials, processes and technologies.

Main foci of research:

- resource conflicts, availability
- geopolitical dependencies
- securing and designing of global supply channels
- economic potentials
- socio-cultural factors, acceptance of new technologies

### Networks

The active construction and the organisation of academic networks is an essential part of our work. We are active on regional, national and international networks which have prescribed to the sustained contact with valuable resources and energy.

To guarantee a geopolitically as much as possible independent care with critical raw materials, it is necessary to bundle up competence at all levels.

### Secondary Materials

Head of Research

Prof. Dr. rer. nat. Liselotte Schebek

We develop innovative concepts for the management of material flows, waste and resources are developed. Such concepts are always based on the trio of (reserve) logistics - technology - socioeconomics. As early as in the product development phase, we develop a concept in conjunction with our clients for recyclable design ("design for disassembly").

In the process, a broad range of raw materials, materials and products is examined: e.g. electric components and parts, luminescent materials and packaging materials.

In addition, valuable substances/materials are taken into account from:

- Slags, Sludges, Landfills
- Ashes
- Adsorbents
- Waste Water
- Food Waste

### Functional Materials

Head of Research

Prof. Dr. Oliver Gutfleisch

This Division deals predominantly with substitutes for rare and expensive raw materials and elements in products, applications and technologies. The goal is the development of innovative materials and the substitution on the level of elements, components, processes and products.

The activities focus on the development of permanent magnets with dramatically reduced content of rare earths, yet with unaltered or improved performance. Exemplary uses for this are electric motors and wind turbines.

Other central activities are the optimisation and development of:

- optical materials
- optoelectronic components
- lightning systems

### Departments and competences

- Analytics
- Biogenic Systems
- Energy Materials
- Magnetic Materials
- Material Flow Management
- Materials Technology
- Urban Mining
- Material Flow Management

### In tangible terms, we offer you:

- Recycling technologies
- Conceptual design and feasibility studies
- Economic feasibility studies
- Development of pilot plants
- System analyses for the increase of raw material and energy efficiency
- Optimisation of waste and resource management
- Optimisation of relevant process steps all along the value added chain and of new reusable material cycles