

Fraunhofer green²ICT IWKS

The research field of "Green ICT" is mainly concerned with energy conservation methods, however, to reach the goal of carbon neutrality in the future the materials used for making the electronics and the methods used for fabrication have to be energy and resource efficient as well. The new group green²ICT at Fraunhofer IWKS is searching for green substitutes for information and communication technology (ICT) materials and work on resource-efficient manufacturing using recyclates as starting materials.



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green²ICT at Fraunhofer IWKS

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The group green²ICT is part of the Attract program of Fraunhofer. The goal is to establish new fields by acquiring experts from outside the Fraunhofer network. For green²ICT we include quantum materials research in an effort to find sustainable substitutes for high-performance ICT materials and the additive manufacturing of intermetallic phases.

Research areas of the group:

Sustainable Additive Manufacturing
and
Quantum Materials
as Substitute for Critical Materials
and for New Applications

Quantum Materials

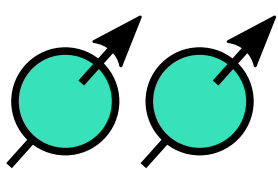
What are they?

The function of quantum materials is based on:

Emergence

electronic correlations

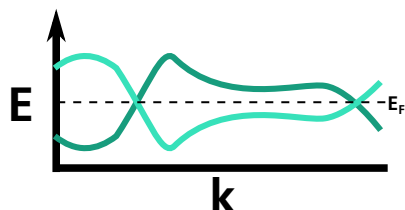
- Magnetic materials
- Superconductors



Topology

Fermi surface geometry

- Topological insulators
- Dirac/Weyl semimetals



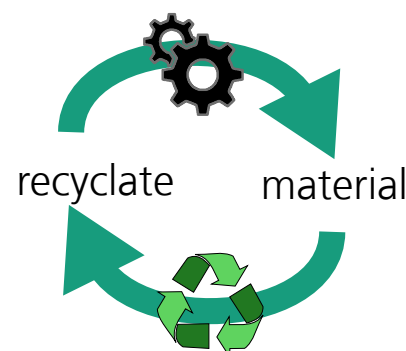
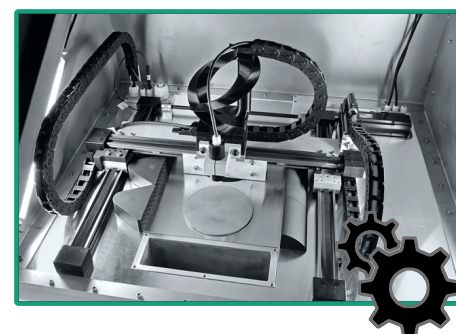
Sustainable Additive Manufacturing

Materials for a Circular Economy



Producing recyclate powders for additive manufacturing using recycled materials as feedstock.

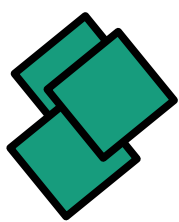
Resource-efficient printing of high-tech materials allowing a high degree of form flexibility.



The goal is to keep the used materials as resource for future materials in the loop and to allow a resource-efficient manufacturing.

magnets thermoelectrics spintronics
catalysts **Applications** sensors
new electronics magnetocaloric

Substitution of Critical Materials



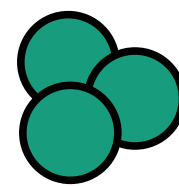
Critical material

Understanding the basic
principles of its function



Property-function relation

Screening for basic property
in sustainable alternatives



Sustainable material

green²ICT



The Attract group green²ICT was initiated in february 2021. For more information, please visit us on our homepage.

Fraunhofer
IWKS



Fraunhofer IWKS, Wolf-Dieter Gericke

Thank you for your interest!