

PhD thesis – Investigations on resource consumption of modern electronics

PhD Topic:

The advertised position deals with research, data collection and synthesis, and investigations on the resource consumption of electronics and its potential to achieve a closed-cycle economy for relevant applications. Huge amounts of resources are presently poured into the electronics sector, while quotas of recycling on any level are totally insufficient to meet the targets of a circular economy. Components, processes, and systems are to be evaluated so that on the various value levels of service, re-use, recycling, harvesting, and refurbishment shall be investigated. A particular focus is devoted to the field of microwaves, however, also other sectors relevant to systematic approaches on research and industrial level shall be investigated. By establishing circular economy approaches for electronics, we want to contribute to the sustainability of manufacturing including all levels of design, material extraction, and overall supply.

Job Details:

- Scientific Employee
- Part-time position
- The position offers the possibility of doctoral studies
- Starting date: At the next possible date
- Time limit: 3 years

Activity Description:

- Simulation of material flows for typical classes of electronics and electronic assemblies.
- Classification of data and establishment of databases for data on electronics and its resource consumption.
- Analyze of systemize typical electronic components for their suitability of circular approaches.
- Design example components and systems with increased ab initio sustainability.
- Provide recommendation design approaches for novel “resource-intensive” electronics.

We expect

- Basic knowledge in semiconductors, electronics, microwave components, and networks
- Enjoyment of the combination of technical and economic problems
- Above-average self-motivation to research sustainability
- Pleasure in participating in a team of researchers

We offer:

- Basic and application-oriented research projects in the field of sustainable electronic systems.
- Cooperation in a synergy of industrial and academic research.
- Access to both industrial as well as purely academic research questions

- A pleasant working environment in a growing and helpful team

Contact

Prof. Dr. Rüdiger Quay

INATECH – Fritz-Hüttinger Professorship Energy-efficient high-frequency electronics (EEH)
Emmy-Noether-Straße 2
79110 Freiburg im Breisgau
ruediger.quay@inatech.uni-freiburg.de