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## **PYROLYSIS OF WASTE ELECTRICAL AND ELECTRONIC EQUIPMENT (WEEE) FOR RECOVERING METALS AND ENERGY: PREVIOUS ACHIEVEMENTS AND CURRENT APPROACHES**

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### **Abstract**

The amount of collected Waste Electrical and Electronic Equipment (WEEE) in Europe is growing about 7 wt.-% per year (2007-2012). It contains a number of economically relevant base, precious and high-tech metals. However, only a limited number of these metals can be recovered by currently applied recycling processes. Especially high-tech metals like gallium, germanium and tantalum get lost during the treatment of WEEE. The pyrolysis technology allows an accumulation of these metals from WEEE-fractions without oxidation as well as the generation of high calorific gases and liquids for energetic utilization. This paper provides a literature based review of lab and medium-scale investigations on pyrolysis processes of different WEEE-fractions like printed wiring boards (PWB) or plastics to outline opportunities and challenges for recovering critical metals from WEEE via pyrolysis. The key procedural challenges are dehalogenation, avoidance of highly-toxic emissions (mainly PBDD/F) as well as preparation and accumulation of metals for recycling processes.

*Key words:* critical metals, metal recycling, pyrolysis, WEEE

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