



LIBS analysis of electronic components on a circuit board.

Identification of valuable technology metals in electronic waste

Modern electronic products contain a variety of metallic elements to ensure they function at a high standard. In addition to the base metals found in these products, technology metals are also used, such as tantalum, tungsten and rare earth elements. Germany and Europe are highly dependent upon imports of these materials. To ensure sustainable development, companies have to reduce their use in primary production, which is why recycling from old equipment will become essential in the future. In today's recycling processes, however, the technology metals are largely lost. One reason for this is that the metals are only concentrated in a few electronic components and usually account for only a small proportion of the total mass.

Conserve natural resources

In order to recycle technology metals more efficiently, Fraunhofer ILT has developed a process in which the composition of individual electronic components can be determined spectroscopically in their installed state. Components containing valuable substances are then quickly removed and sorted without contact. The metals can be efficiently recovered from these new sorting fractions using existing technological processes.

Sustainable recycling with LIBS

The process of scanning laser-induced breakdown spectroscopy (LIBS) can be used to efficiently determine the composition of electronic circuit boards and identify worthwhile components to then be removed selectively. By using LIBS on a large number of cell phone models, the institute has generated an extensive database that serves as the basis for a take-back system for used cell phones with a suitable material stream for selective dismantling. In the future, high-quality technology metals can be extracted from these materials for use in new products. Also, complex components can be analyzed with the help of LIBS for targeted further processing.

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