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## Non-Destructive Bulk Analysis of Critical Metals in Smartphones

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Commonly, smartphones contain about 30 different metals [1]. From these many are considered as Critical Raw Materials (CRMs), as they are economically very important combined with high supply risks and a lack of viable substitutes [2,3]. Therefore, they are critical for a sustainable economy [3]. Additionally, most of these elements are mined under devastating social and/or ecological conditions and are often subject to unfair trade [4]. Especially, the strongly versatile and growing smartphone market has a high demand on many of these partly highly critical metals. However, hardly any scientific data is available about the market consumption of these critical metals, which is essential to develop technical and economic concepts to overcome existing critical aspects.

These new concepts are strongly developed by some smartphone manufacturers, especially to compensate negative ecological and social effects from mining and trade of these metals. Their aim is to provide the market with sustainable smartphones. To gain insight, 3 different mobile phones were analysed by PGAA and NAA. This study was performed to test firstly the suitability of these methods and secondly to compare metal compositions of different smartphone manufacturers, one of them developing sustainable smartphones. We present first results.

#### References:

- [1] [www.informationszentrum-mobilfunk.de/umwelt](http://www.informationszentrum-mobilfunk.de/umwelt)
- [2] [ec.europa.eu/growth/sectors/raw-materials/](http://ec.europa.eu/growth/sectors/raw-materials/)
- [3] [criticalrawmaterials.org](http://criticalrawmaterials.org)
- [4] [www.amnesty.org/en/latest/news/](http://www.amnesty.org/en/latest/news/)

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