Work Package 1

The New Sources of Cobalt - Characterization of new ore types and ores for new types of processing

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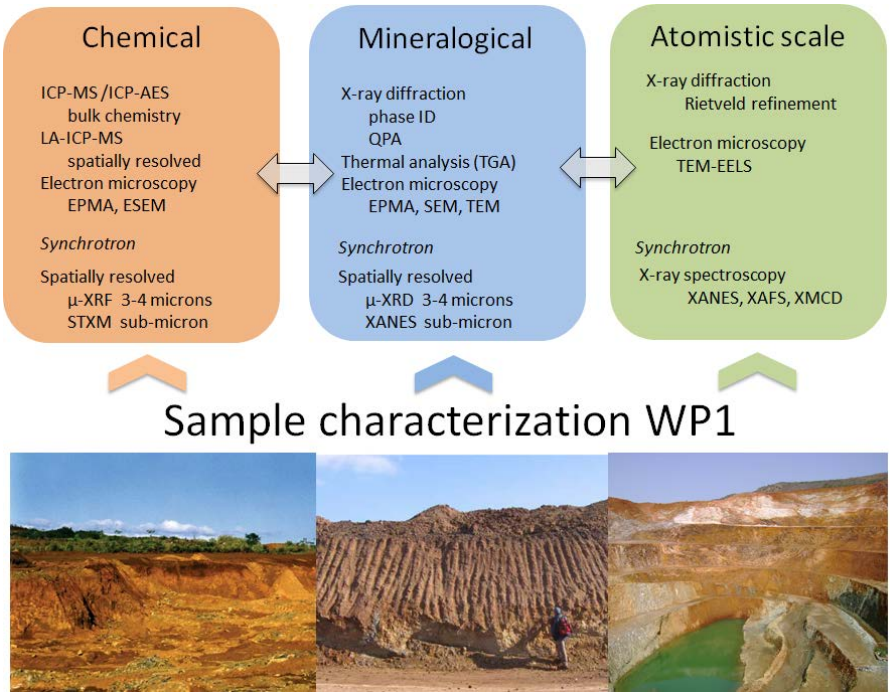
The aim of this work package is to provide detailed **mineralogical**, **chemical** and **atomistic-scale characterization** (Natural History Museum, Diamond Light Source, Loughborough University and Southampton University) of natural Co-bearing concentrations that represent potential new sources of the element. This comprehensive characterization will underpin the proposed research of WPs 2-4 that are examining novel techniques for Co extraction, enrichment and processing in order to provide tailored materials as required by the end users of this critical E-tech element.

Sampling sites - COG3 project

Cobalt from four contrasting recoverable reserves will be studied:

- **Cobalt-rich laterites** that currently provide 20% of the world's cobalt despite the fact that most of the hydrometallurgical technologies are optimized for Ni extraction leaving much of the Co unrecovered
- **Seafloor Fe-Mn crusts** and nodules which represent a huge potential future and strategic resource of Cobalt
- **Reduced sediment-hosted** Co ores. The Central African Copperbelt, (Zambia/DRC) is the world's largest cobalt producing region, yielding 57% of world production. The Kupfershiefer (central/northern Europe) is currently a resource for metals such as Cu, Au, and Ag but the viable Co remains unrecovered

- **Chalcogenide** mineralogy of Bou Azzer, Morocco, is the only mixed sulfide-arsenide deposit in which cobalt is the primary target metal. Bou Azzer provides 8% of the world's Co, which is recovered using intensive pyrometallurgical techniques



Graphical representation of work within WP1