Technology Metals for a Green Future: The Role of Biomining

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Current global efforts to achieve net-zero carbon emissions is leading to increased mining of 'Technology Metals'. These are the metals needed for 'green' technologies such as battery-powered electric vehicles, solar photovoltaics and wind power generation. Examples include cobalt, lithium, rare earth elements, tin, copper and tungsten. Although their current annual global production is not large (~100-100000 T) demand is increasing significantly. This rapid increase in demand is in turn driving a need for sustainable mining practices to exploit them profitably while protecting ecosystems and human rights and health. Biomining is such a practice, and is well-established for extraction of metals such as copper. This presentation will review biomining of copper and other technology metals, highlighting research in the NEMO (Near-zero-waste recycling of low-grade sulfidic mining waste for critical-metals, mineral and construction raw-material production in a circular economy) and Met4Tech (Interdisciplinary circular economy centre for technology metals) projects.