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TMS 2025

154th Annual Meeting & Exhibition

March 23–27, 2025
MGM Grand Las Vegas
Hotel & Casino
Las Vegas, Nevada, USA
#TMSAnnualMeeting

SUBMIT AN ABSTRACT FOR THE FOLLOWING TMS2025 SYMPOSIUM:

MATERIALS SYNTHESIS AND PROCESSING

Innovative Hydrometallurgical Technologies for Environmentally Benign Processing and Remediation: An EPD Symposium Honoring Fiona Doyle

TMS TECHNICAL DIVISIONS HONORARY SYMPOSIUM
EPD · FMD · LMD · MPMD · SMD

Professor Doyle has worked in a wide range of areas in which she applied her fundamental work on chemical thermodynamics, chemical and electrochemical kinetics, transport phenomena, colloid and interfacial science to develop a fundamental mechanistic understanding of minerals and materials processing operations and materials-solution interactions, with a goal of developing a foundation for ensuring sustainability and economic competitiveness in the supply of resources and energy.

It is proposed to have different sessions that recognize her work in the different areas, as well as current research interests. The processing and recovery of critical minerals via hydrometallurgical methods is essential for the transition to renewable, green energy. The first topic is planned to focus on the recovery of critical minerals from primary ores, byproducts, slags and tailings, scraps and waste fractions. Papers both on the fundamentals of recovery mechanisms as well as applied, upscaled approaches are welcome, including development of new technologies and equipment.

The second topic focusses on novel separation technologies and methods, including microbial extraction, in the context of 1) rare earth recovery and 2) removal of (heavy) metals from aqueous streams for environmental considerations. Increasingly stringent environmental regulations require removal of metal contamination from aqueous streams to very low levels. This includes streams such as waste streams from hydrometallurgical processing, cooling and off-gas treatment streams, run-off water (e.g. metallurgical operations, storage, recycling operations), water from tailing storage and mines, as well as aqueous streams from manufacturing processes (e.g. plating) for example.

The third topic in this symposium examines the environmental impact of mining and metallurgical operations from two angles. Firstly, the precise assessment of this using Life Cycle Assessment is challenging, among others due to missing or incorrect data in databases. Papers on new approaches to achieve increased precision in LCA, and papers on improvement of the data base are sought. Secondly, contributions discussing the modification of processes and equipment to improve their environmental performance are sought, in particular but not limited to, the areas mentioned above (processing and recovery of critical minerals, rare earth recovery, removal of (heavy) metals from aqueous streams).

ORGANIZERS

Christina Meskers, SINTEF**; Michael Free,** University of Utah**; Kerstin Forsberg,** KTH Royal Institute of Technology**; Gisele Azimi,** University of Toronto**; Hani Henein,** University of Alberta

SYMPOSIUM SPONSORS

TMS Extraction & Processing Division, TMS Hydrometallurgy and Electrometallurgy Committee; TMS Pyrometallurgy Committee

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