



Press release

Defence on 10/09/2021

Understanding the properties of mining process water

Title of the doctoral thesis The characterization of industrial process water properties: A methodology case study from the mining industry

Content of the doctoral thesis Due to the potential adverse effects of recycled water on the performance of mineral separation processes, water management in mining is now shifting focus to not only fulfil the environmental regulations but also to improve process performance. The dynamicity and variability in terms of quality of recycled process water bring challenges in the recovery and the quality of the final products. By turning water quality into operating parameters, its properties could be controlled and modified to hopefully provide added value to the process outputs.

This thesis aims to explore the challenges and to fill the gaps for transforming water quality into a set of operating parameters in mineral processing. The underlying idea is to investigate and develop tools that are needed for making suitable water quality for each processing step. This thesis focuses on three main cornerstones that are relevant for managing water in a context related to operating performance: (1) procedure for collecting process water data, (2) data analysis and monitoring methods, (3) procedure for predicting process water variation and laboratory testing method for investigating the effect of water matrix on process performance. The traditional methods for those mentioned aspects developed for effluents (environmental purposes) have neglected to account for the three major characteristics of recycled process water: dynamic, complex and mine specific, a shortcoming this thesis addresses. This thesis asks to what extent traditional methods for managing water for environmental purposes are applicable for managing water in respect to the process performance.

Field of the doctoral thesis Bioproduct Technology

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Remote defence <https://aalto.zoom.us/j/63723465308>

Place of defence In Aalto University, School of Chemical Engineering, lecture hall L1, Vuorimiehentie 1, Espoo

Opponent(s) Professor Przemyslaw B. Kowalcuk, Norwegian University of Science and Technology

Professor Kim H. Esbensen, Aalborg University (AAU), Denmark, Geological Survey of Denmark and Greenland (GEUS), Université du Québec à Chicoutimi (UQAC), Quebec

Custos Professor Olli Dahl, Aalto University School of Chemical Engineering

Link to electronic thesis <https://aaltodoc.aalto.fi/handle/123456789/109083>