

## Characterization of Rag Layer Solids

Morvarid Madjlessi Kupai, David Harbottle, Zhenghe Xu and Jacob Masliyah  
*Department of Chemical and Materials Engineering, University of Alberta*

In water-oil separation a viscous intermediate layer is often observed to form between the two liquid phases. This intermediate region commonly referred to as a 'rag-layer' is known to be extremely stable and disruptive to efficient dewatering.

Two industrial froth samples recovered from the primary and secondary hydrocyclones of a froth treatment plant are considered due to their contrasting behavior. Whilst the primary cyclone underflow forms no stable rag layer, the secondary cyclone underflow forms a rag layer that remains stable in excess of 3 months. Solids and mineralogy analysis confirmed; i) rag-forming solids are more hydrophobic and coated with more aromatic compounds, and ii) rag-forming solids are composed of a significant fraction of iron-based minerals such as siderite and pyrite. This transition in mineralogy is believed to be the problematic cause for stable rag layer formation.