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OLI Engine in METSIM®

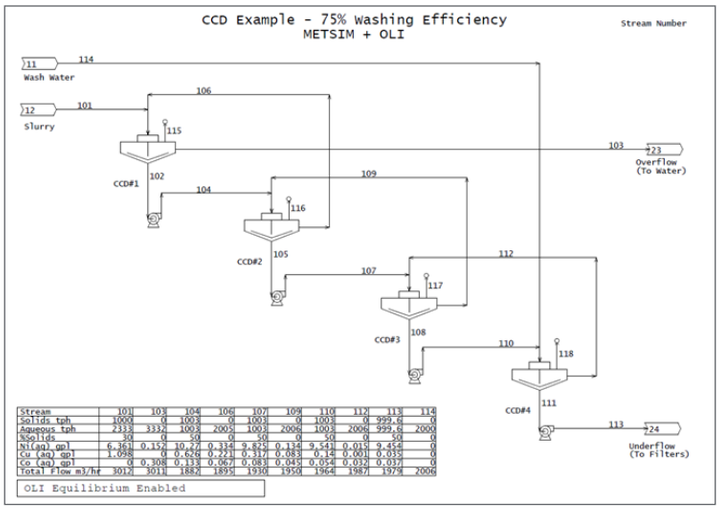
The OLI Engine in METSIM® enables access to the full MSE databank for OLI Models from within the METSIM® flowsheet simulation environment. This product is made available through the collaborative efforts of OLI Systems and our Alliance Partner, METSIM® International.

METSIM® is widely utilized in the mineral processing industry, including hydrometallurgical processes. The incorporation of the OLI Engine into these flowsheets can significantly enhance the accuracy of simulating crucial processing steps involving complex electrolyte solutions.

In this software offering, the OLI Engine is called when necessary, at significant points within the flowsheet, rather than being called for every unit in the flowsheet. This approach allows the swift execution of simple operations with the accuracy of OLI calculations when they are required.

For water or electrolyte streams in a process, the Electrolyte Simulation Powered by OLI Systems within METSIM® enables predictive electrolyte simulations in a more traditional flowsheet environment. The OLI Engine can be called from any unit operation in the METSIM® library at any point in the flowsheet. The results are automatically written into the unit operation discharge streams and stored as data matrices for reference.

By combining accurate chemistry with considerations related to stream handling, such as washing efficiency in a CCD circuit, the precision of mass balances and plant design considerations is ensured. OLI chemistry calculations are also available within METSIM® dynamic simulations, adding true value to your project.



Features	
Electrolyte OLI Property Package	Buil on OLI's thermodynamic framework and is accessible through the METSIM® Equilibrium Module.
Electrolyte Component Database	The METSIM® Equilibrium Module allows for the mapping of any OLI component to an equivalent species in the METSIM® project.
Electrolyte Properties	Calculation and display of thermodynamic and transport properties specific to electrolyte systems, including pH, osmotic pressure, ionic strength, and electrical conductivity (under development).
Unit Operations	All unit operations within METSIM® can seamlessly call the OLI routines, effectively linking your flowsheet model to accurate chemical calculations.

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Capabilities	
Complete speciation	• The OLI MSE model predicts and considers all true species in solution within the following ranges: • **Temperature:** -50°C to 90% of Tcrit. For a water-rich solution, this would be approximately 340°C. • **Pressure:**1500 bar and higher • **Ionic Strength:** No limit • **TDS (Total Dissolved Solids):** No limit • **Concentration:** From infinite dilution to fused salt. There are no concentration limits for both electrolytes and nonelectrolytes.
Standard state framework	Based on the Helgeson-Kirkham-Flowers-Tanger equation of state.
Activity coefficients for complex and concentrated systems	The mixed solvent activity coefficient model (MSE) is based on OLI's internally developed model, extensively published in peer-reviewed literature.
Comprehensive databanks	OLI provides a complete databank with 80 inorganic elements, associated solution species and complexes, and numerous organics. Additionally, OLI offers a paid thermophysical modeling service for customized coverage of client chemistry in the form of private databanks and/or extensions to the OLI databank.
Thermophysical properties	OLI has developed unique chemical/physical models to compute thermodynamic (bulk and interfacial) and transport properties for complex electrolyte mixtures.

Applications

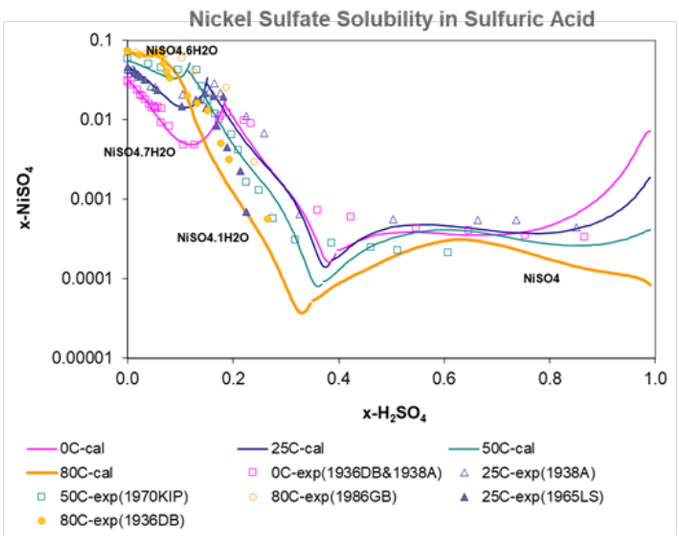
Ore Extraction
- Kiln digestion of ores (REE)
- Heap leaching of laterites (Ni, Co)
- Acid-extraction of a supergene (Cu)
- HPAL of oxide ores (Ni, Co)
- Pond evaporation (K, Li, Mg, Na)
- Clay Leaching (Li, REE)
- Acid leaching of oxides (Ti, Fe)

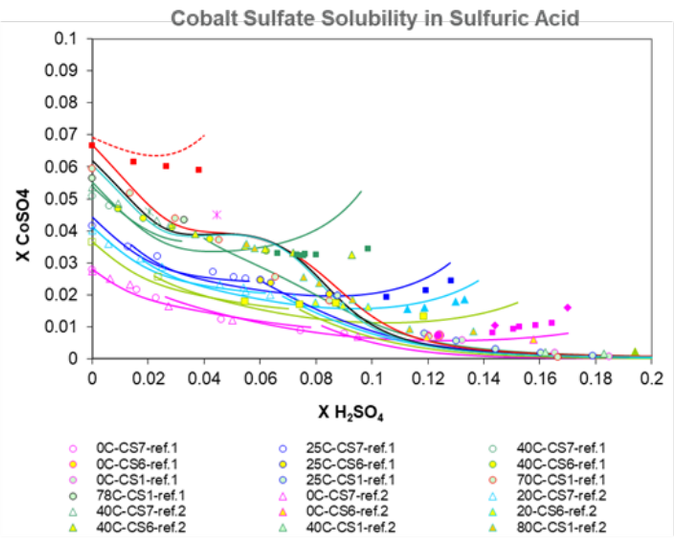
Metals Purification
- Carbonation/electrolysis (Li)
- CCD (REE, Ni, Co)
- Ion exchange separation (Li)
- Metathesis (La, Ce)
- Precipitation, Roasting (REE)
- Kiln drying (MoP, SoP)
- Acid leaching of oxides (Ti, Fe)

Cleanup
- Acid gas scrubbing
- Water reuse
- Water purification
- AMD remediation

OLI gives you accurate predictions

Your chemistry systems upon request





Symbols are experimental points, curves are OLI predications

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