



# Carbon Transportation: Mitigating Corrosion Risk in Pipelines and Ships

Enhance reliability with rigorous water chemistry insights & intelligence

## Abstract:

All industrial companies including oil & gas, chemicals, metals, mining and power generation that generate CO<sub>2</sub> emissions as well as the metals and manufacturing companies that supply products to these industries have the need to engage in carbon capture and sequestration.

Carbon capture and sequestration requires the transportation of CO<sub>2</sub> through pipelines or ships. The transported CO<sub>2</sub> invariably contains various impurities such as NO<sub>x</sub>, SO<sub>x</sub>, O<sub>2</sub>, or H<sub>2</sub>S, which can form nitric and sulfuric acids that can rapidly corrode pipelines or tanks. These acids will be corrosive only when they form a separate phase that drops out from the CO<sub>2</sub> phase making the accurate prediction of the solubility of the acids in dense-phase CO<sub>2</sub> critical to pipeline integrity and increased process reliability.

OLI Systems researchers Ronald Springer and Andre Anderko collaborated with researchers from Institute for Energy Technology Norway and the University of Oslo to establish thermophysical parameters based on experimental solubility data. These parameters were incorporated into the OLI Software platform to characterize the solubilities of the acids using simulation models to predict corrosion risk during CO<sub>2</sub> transportation.

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