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# Magnetic Nanoparticle Extraction of Lithium from Produced Waters

CRADA 483

September 2021

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Abstract

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the U.S. Department of Energy  
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## Abstract

In this project, we will synthesize, evaluate, and screen a set of new sorbents that have high capacity and selectivity for lithium. Sorbent performance will be evaluated by conducting Li extraction tests with produced water samples supplied by ConocoPhillips Company, Moselle Technologies, and Cascade Natural Resources. The best performing of these sorbents based on Li uptake capacity and selectivity will be produced as a magnetic nanoparticle and subjected to extended cycle testing in our laboratory bench-scale magnetic separator system. Moselle has acquired an exclusive license to the background IP associated with this magnetic nanoparticle mineral extraction technology and wishes to foster implementation of the technology in the oil & gas industry through this CRADA. Moselle will support PNNL in the design of a commercial-scale magnetic separator system tailored for lithium production. The goal is to collect sufficient information to support a decision by our industry partners to invest in a subsequent field demonstration at one of our partner's field sites as a prerequisite to advancing this technology towards commercialization.

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