



## Postdoctoral positions available at Brown University

Research Group:

**Andrew Peterson**

School of Engineering

Brown University

Providence, RI, USA

<http://brown.edu/go/catalyst>

Two postdoctoral positions will be available in the research group of Andrew Peterson at Brown University. The research group combines theoretical calculations with laboratory-based testing to understand reactions at materials interfaces, related to catalysis and electrochemical energy storage. Specific details of the positions are below. To apply, send CV and statement of interest to [andrew\\_peterson@brown.edu](mailto:andrew_peterson@brown.edu). For further information, see <http://brown.edu/go/catalyst>.

**Batteries: Understanding solid–electrolyte interphase phenomena in lithium batteries.** A postdoctoral position is available to understand the reactivity of the electrolytic fluid in lithium ion batteries in the stages where the “interphase” is created between the solid and electrolyte phases, known as the solid-electrolyte interphase (SEI). This project will use atomistic and electronic structure methodologies to predict and understand the existence and function of this layer, which is crucial to the performance and safety of modern batteries. While theoretical in nature, the researcher will interact strongly with a diverse team of experimental and theoretical colleagues at multiple institutions, to understand the implications and correlations of the theoretical calculations with experimental characterizations of battery structure.

**Solar fuels: Development and testing of improved electrocatalytic materials for CO<sub>2</sub> reduction.** A postdoctoral position is available to design and test improved electrocatalytic materials for carbon dioxide reduction, with an emphasis on the electrocatalytic conversion of CO<sub>2</sub> to hydrocarbons (fuels) and commodity chemicals. The project will involve the development of a fundamental understanding of alternate reaction mechanisms (e.g., via Mars-van Krevelen approaches) on classes of reaction materials along with the prediction of materials properties based on electronic structure calculations. Experimental testing and characterization of candidate materials will provide feedback for the continued improvement of materials. This position will involve the application of both theory and experiment and the ideal candidate will bring experience in both areas, however, motivated individuals with expertise in only one area and a strong desire to expand their skills will also be encouraged.

Brown University is located in Providence, Rhode Island, a metropolitan area of 1.6 million people located within a one-hour train ride from Boston and a three-hour train ride from New York.