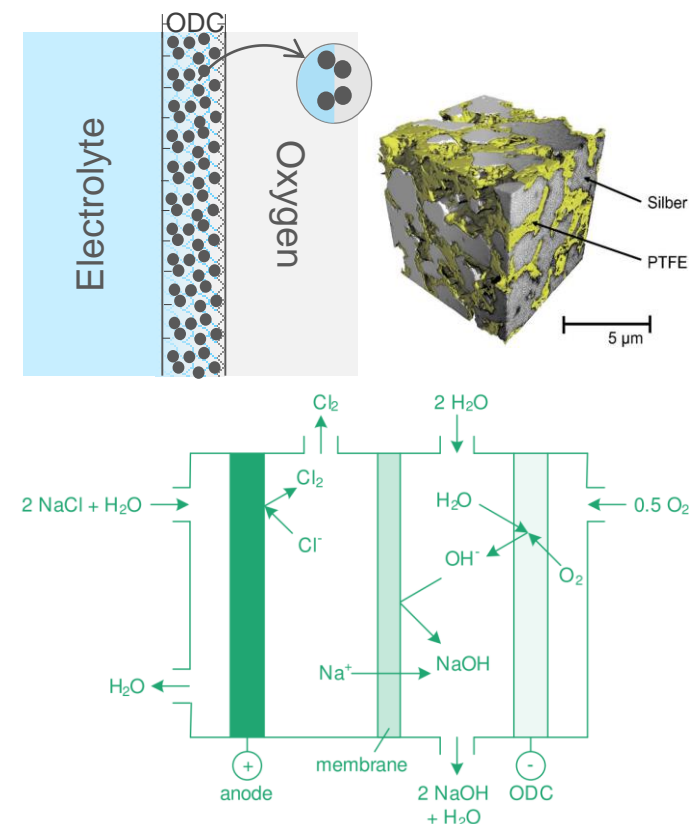


Development and Characterization of Innovative Oxygen-Depolarized Cathodes for Chlor-Alkali Electrolysis

Chlor-alkali electrolysis is a central process in the chemical industry for the production of chlorine, hydrogen, and caustic soda. Accounting for around 2% of Germany's electricity consumption, it is one of the most energy-intensive industrial processes (as of 2018). A significant advance in reducing electrical energy consumption has been achieved through the use of so-called oxygen-depolarized cathodes (ODCs). These represent a special form of gas diffusion electrodes (GDEs) and enable oxygen reduction instead of the conventional hydrogen evolution reaction. This alternative cathode process makes it possible to significantly lower the cell voltage and thus save up to 25% of electrical energy compared to conventional chlor-alkali processes.

What you will be working on together with our team:

- Development of novel electrode concepts for optimization of ODCs
 - Fabrication of electrodes using spraying method
 - Comprehensive characterization of the electrodes using modern analytical methods
- Performing electrochemical investigations
- Evaluation, presentation, and discussion of the results obtained within the team



Type of thesis: Master's or Bachelor's Thesis

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Method: Experimental Focus

Location: ICVT, Clausthal

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