## swerea

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## Master thesis

## Fuel cell development – where physics, chemistry and materials science meet

Fuel cells offer an efficient way to produce electricity through electrochemical reactions instead of combustion. For high temperature fuel cells (solid Oxide Fuel Cells, SOFC) the choice of fuel is flexible (not limited to  $H_2$ ) and the efficiency is high, but the high temperatures cause some material problems.

	← Air	
Porous cathode	$\frac{1}{2} O_2 + 2e^- \longrightarrow O^{2-}$	<
Dense electrolyte	O <sup>2-</sup> ↓	e <sup>.</sup> ↑ Load
Porous anode	$H_2 + O^2 \longrightarrow H_2O + 2e^2$	
Fuel (H <sub>2</sub> )	$\rightarrow$	

The ceramic group at the research institute Swerea IVF and the electrophysics group at Chalmers cooperate in a project focused on manufacturing and characterization of fuel cells. As a part of this project there is an opening for a master thesis within one or more of the following topics:

- Ceramic manufacturing techniques
- Sintering
- Materials characterization
- Fuel cell performance

If you are interested in a thesis of 30 or 60 credits, please contact:

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