Technical University of Denmark

Popular science summary of the PhD thesis

PhD student	Louis Sadowski Cavichiolo
Title of the PhD thesis	Development of advanced interconnects for solid oxide cell stacks
PhD school/Department	DTU Construct – Department of Civil and Mechanical Engineering

Science summary

Solid oxide cell stacks are a clean technology that can help in the fight against climate change. By utilizing sustainable electricity from sources like wind and solar, these cell stacks can produce chemicals without emitting greenhouse gases. Topsoe, the industrial partner of this Ph.D. work, is actively working on scaling up this technology.

A critical component of solid oxide cell stacks is the metallic interconnect. These interconnects help ensure the proper functioning of the solid oxide cell stacks. However, the current interconnects are made from expensive and critical raw materials like Cobalt, which can hinder widespread commercialization.

In this Ph.D. project, we have made significant progress in understanding the factors that affect the functionality of lower-cost interconnect materials in solid oxide cell stacks. We have developed an alternative interconnect made only from earth-abundant materials. This interconnect can be manufactured using existing industrial processes and has the potential for long lifetimes. Additionally, we have introduced a new method to speed up the development of low-cost interconnect materials. This method holds promise for a future generation of commercially available interconnect materials.

These advancements bring us closer to the realization that solid oxide cell stacks can make a substantial contribution to combating climate change. By reducing costs and utilizing sustainable electricity, this technology can play a vital role in creating a cleaner and greener energy future.

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Please email the summary to the PhD secretary at the department