

Inkjet manufacturing of CCMs for PEMFC

by development of catalytic inks & their deposition

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Motivation

To achieve a CO₂-neutral energy economy, the German-Spanish-Czech consortium makes impact on the current hydrogen fuel cell technology by tailoring the catalytic ink and processing it using digital inkjet-printing technology supplementing the currently used analogous processes.

Achievements / results

- Inkjet-printed CCMs perform better than state-of-the art ultrasonic sprayed ones
- Synthesized bio-based ionomers present good and temperature stable ionic conductivity
- Microwave synthesis of Pt/C catalysts are basis for core shell catalyst development
- Newly developed materials show performance comparable to commercial ones
- Simulation of catalyst distribution generates better understanding for processes
- Project results meet industrial target performance parameters

Conclusions and impact / Take-home-Message

Inkjet-printed catalyst layers on PEM employing bio-based ionomers and microwave synthesized catalysts are functional and pave the way for affordable and sustainable energy (SDG 7) and innovative industrial processes (SDG 9)

The most important achievements of each partner will be presented in the talk.