

## Poster-Session

### Protective coatings on bipolar plates for PEM-electrolysis: Gradient coatings for fast material screening

F. Tabary<sup>1</sup>, H. Chen<sup>1</sup>, Dr. A. Georg<sup>1</sup>, Dr. T. Smolinka<sup>2</sup>

<sup>1</sup>Fraunhofer-Institut für Solare Energiesysteme ISE, Coating Technology and Systems, Freiburg;

<sup>2</sup>Fraunhofer-Institut für Solare Energiesysteme ISE, Chemical Energy Storage, Freiburg

[farzin.tabary@ise.fraunhofer.de](mailto:farzin.tabary@ise.fraunhofer.de)

One critical aspect of polymer electrolyte membrane water electrolysis (PEMWE) is the electrical losses due to high interfacial contact resistance (ICR) in between the porous transport layer (PTL, typically titanium-based) and the electrode due to passivation of the titanium. To overcome this issue, the PTL is typically coated by platinum, which is expensive. As a cost-efficient alternative, we are investigating mixtures of metals for coating.

For that, we developed an experimental method for fast screening of mixed materials. Especially, we synthesize samples with gradients of the composition by co-sputtering with two targets, which are later oxidised in one step at 2V vs. RHE to simulate the corrosive condition within PEMWE and measured with respect to their ICR, depending on the composition. As a result, ICR after oxidation can be described for mixed materials depending on the composition, and dependency of ICR on specific bulk conductivity can be plotted for composition variations.