

## List of publications: Dr. Ioannis Spanos

2025

K Ham, S Albarqawi, SM El-Refaei, A Lim, **I Spanos\*** (2025) Probing the Effect of Spectator Anions on Chloride Adsorption for Selective Oxygen Evolution Reaction over Ni Catalysts  
*ChemElectroChem* 13 (1), e202500387

A Olean-Oliveira, AR Khan, B Toplak, **I Spanos**, M Hammad, A Jain, U Hagemann, H Wiggers, D Segets, V Čolić (2025) Intrinsic Activity and Mechanistic Insights in LaCoO<sub>3</sub> OER Catalysts Induced by Support Material  
*Electrochimica Acta*, 147874

D Simondson, MF Tesch, **I Spanos**, TE Jones, J Guo, BV Kerr, M Chatti, S A Bonke, R Golnak, B Johannessen, J Xiao, D R MacFarlane, R K Hocking, A N Simonov (2025) Decoupling the catalytic and degradation mechanisms of cobalt active sites during acidic water oxidation  
*Nature Energy* 10 (8), 1013-1024

A Lim, K Ham, T Quast, S Lee, MF Tesch, S Czioska, D Ramermann, W Hetaba, W Schuhmann, J-D Grunwaldt, S K Cho, H-Y Park, J H Jang, S H Ahn, **I Spanos\***, H S Park (2025) Limited Surface Oxide Growth as a Prerequisite for Stabilizing Low-Loading Iridium Electrodes for PEM Water Electrolysis  
*ACS Catalysis* 15 (8), 6098-6113

2024

V Vinayakumar, T Wagner, C Marcks, J Johnny, G Wartner, MF Tesch, **I Spanos**, A Ghafari, A Jain, O Prymak, I Sanjuán, A S Odungat, O Anwar, M Chatwani, A Jose, V Chanda, A Knop-Gericke, C Andronesco, A K Mechler, N Wöhr, D Segets (2024) Ni-Co-O anodes for the alkaline oxygen evolution reaction: Multistage electrode optimization and plasma-assisted activity enhancement enabled by a coherent workflow  
*Chemical Engineering Journal* 523 (2025) 167169

A Olean-Oliveira, N Hasnain, R Martinez-Hincapie, U Hagemann, A Jain, D Segets, **I Spanos**, V Colic (2024) Electrochemical Insights into Hydrogen Peroxide Generation on Carbon Electrodes: Influence of Defects, Oxygen Functional Groups, and Alkali Metals in the Electrolyte  
*ACS Catalysis* 14 (23), 17675-17689

A Lim, K Ham, S Elrefaei, **I Spanos\*** (2024) Operando interpretation of reaction mechanisms and local phenomena on OER catalysts in seawater electrolysis  
*Current Opinion in Electrochemistry* 47, 101560

AR Zeradjanin, A Lim, **I Spanos**, J Masa (2024) What Limits Conquest of Stability Descriptors?—Intriguing Aspects of Dissolution of Oxygen Evolution Electrocatalysts  
*ChemElectroChem* 11 (12), e202300832

S El-Refaei, D L Rauret, A G Manjón, **I Spanos**, A Zeradjanin, S Dieckhöfer, J Arbiol, W Schuhmann, J Masa, (2024) Ni-Xides (B, S, and P) for alkaline OER: shedding light on reconstruction processes and interplay with incidental Fe impurities as synergistic activity drivers  
*ACS Applied Energy Materials* 7 (4), 1369-1381

2023

A Lim, MF Tesch, **I Spanos\*** (2023) The power of operando analysis: Understanding the critical characteristics of OER catalysts from atomistic to systemic scales  
*Current Opinion in Electrochemistry* 39, 101272

Jiménez, A. M. B., Sichevych, O., **Spanos, I.**, Altendorf, S. G., Ormezi, A., Antonyshyn, I. (2023) Al–Pt compounds catalyzing the oxygen evolution reaction. *Dalton Transactions*  
<https://doi.org/10.1039/D2DT03234A>

2022

Kang, S., Im, C., **Spanos, I.**, Ham, K., Lim, A., Jacob, T., Schlögl, R., Lee, J. (2022) Durable Nickel-Iron (Oxy) hydroxide Oxygen Evolution Electrocatalysts through Surface Functionalization with Tetraphenylporphyrin. *Angewandte Chemie International Edition*  
<https://doi.org/10.1002/anie.202214541>

Haase, F. T., Rabe, A., Schmidt, F.P., Herzog, A., Jeon, S. H., Frandsen, W., Narangoda, P. V., **Spanos, I.**, Ortega, K. F., Timoshenko, J., Lunkenbein, T., Behrens, M., Bergmann, A., Schlögl, R., Cuenya B. R. (2022) Role of Nanoscale Inhomogeneities in Co<sub>2</sub>FeO<sub>4</sub> Catalysts

during the Oxygen Evolution Reaction. *Journal of the American Chemical Society* <https://doi.org/10.1021/jacs.2c00850>

Narangoda, P., **Spanos, I.**, Masa, J., Schlögl, R., Zeradjanin, A.R. (2022) Electrocatalysis Beyond 2020: How to Tune the Preexponential Frequency Factor. *ChemElectroChem* <https://doi.org/10.1002/celec.202101278>

Papakonstantinou, G., **Spanos, I.**, Dam, A.P., Schlögl, R., Sundmacher, K. (2022) Electrochemical evaluation of the de-/re-activation of oxygen evolving Ir oxide. *Physical Chemistry Chemical Physics* <https://doi.org/10.1039/D2CP00828A>

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Zeradjanin, A.R., Masa, J., **Spanos, I.**, Schlögl, R. (2021). Activity and stability of oxides during oxygen evolution reaction-From mechanistic controversies toward relevant electrocatalytic descriptors. *Frontiers in Energy Research* <https://doi.org/10.3389/fenrg.2020.613092>

Ding, Y., Zhang, L., Gu, Q., **Spanos, I.**, Pfänder, N., Wu, K.H., Schlögl, R. (2021) Tuning of Reciprocal Carbon-Electrode Properties for an Optimized Hydrogen Evolution. *ChemSusChem* <https://doi.org/10.1002/cssc.202100654>

**Spanos, I.\*.**, Masa, J., Zeradjanin, A., Schlögl, R. (2021). The effect of iron impurities on transition metal catalysts for the oxygen evolution reaction in alkaline environment: activity mediators or active sites? *Catalysis Letters* <https://doi.org/10.1007/s10562-020-03478-4>

Zeradjanin, A.R., Narangoda, P., **Spanos, I.**, Masa, J., Schlögl, R. (2021). Expanding the frontiers of hydrogen evolution electrocatalysis—searching for the origins of electrocatalytic activity in the anomalies of the conventional model. *Electrochimica Acta* <https://doi.org/10.1016/j.electacta.2021.138583>

AR Zeradjanin, P Narangoda, **I Spanos**, J Masa, R Schlögl, How to minimise destabilising effect of gas bubbles on water splitting electrocatalysts? *Current Opinion in Electrochemistry* <https://doi.org/10.1016/j.coelec.2021.100797>

2020

Ruiz Esquius, J., Algara-Siller, G., **Spanos, I.**, Freakley, S.J., Schlögl, R., Hutchings, G.J. (2020). Preparation of Solid Solution and Layered IrO<sub>x</sub>-Ni(OH)<sub>2</sub>Oxygen Evolution Catalysts: Toward Optimizing Iridium Efficiency for OER. *ACS Catalysis* <https://doi.org/10.1021/acscatal.0c03866>

Zeradjanin, A.R., **Spanos, I.**, Masa, J., Rohwerder, M., Schlögl, R. (2020). Perspective on experimental evaluation of adsorption energies at solid/liquid interfaces. *Journal of Solid State Electrochemistry* <https://doi.org/10.1007/s10008-020-04815-8>

Antonyshyn, I., Barrios Jiménez, A.M., Sichevych, O., Burkhardt, U., Veremchuk, I., Schmidt, M., Ormeci, A., **Spanos, I.**, Tarasov, A., Teschner, D., Algara-Siller, G., Schlögl, R., Grin, Y. (2020). Al<sub>2</sub>Pt for Oxygen Evolution in Water Splitting: a Strategy for Creating Multi-functionality in Electrocatalysis. *Angewandte Chemie International Edition* <https://doi.org/10.1002/anie.202005445>

Ding, Y., Gu, Q., Klyushin, A., Huang, X., Choudhury, S.H., **Spanos, I.**, Song, F., Mom, R., Dungen, P., Mechler, A.K., Schlögl, R., Heumann, S. (2020). Dynamic carbon surface chemistry: revealing the role of carbon in electrolytic water oxidation. *Journal of Energy Chemistry* <https://doi.org/10.1016/j.jechem.2019.12.006>

Ruiz Esquius, J., Morgan, D.J., **Spanos, I.**, Hewes, D.G., Freakley, S.J., Hutchings, G.J. (2020). The effect of Base on the Facile Hydrothermal Preparation of Highly Active IrO<sub>x</sub> Oxygen Evolution Catalysts. *ACS Applied Energy Materials* <https://doi.org/10.1021/acsaem.9b01642>

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**Spanos, I.\***, Tesch, M.F., Yu, M., Tüysüz, H., Zhang, J., Feng, X., Müllen, K., Schlögl, R., Mechler, A.K. (2019). Facile protocol for alkaline electrolyte purification and its influence on a Ni-Co oxide catalyst for the oxygen evolution reaction. *ACS Catalysis* <https://doi.org/10.1021/acscatal.9b01940>

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**Spanos, I.\***, Auer, A.A., Neugebauer, S., Deng, X.H., Tüysüz, H., Schlögl, R. (2017). Standardized Benchmarking of Water Splitting Catalysts in a Combined Electrochemical FlowCell/Inductively Coupled Plasma-Optical Emission Spectrometry (ICP-OES) Setup. *ACS Catalysis* <https://doi.org/10.1021/acscatal.7b00632>

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**Spanos, I.**, Pelegrín Rellán, C., Altmann, L., Bäumer, M., Arenz, M. (2014). Pt<sub>x</sub>Co<sub>1-x</sub> alloy NPs prepared by colloidal tool-box synthesis: The effect of de-alloying on the oxygen reduction reaction activity. *International Journal of Hydrogen Energy* <https://doi.org/10.1016/j.ijhydene.2014.03.199>

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