

## List of publications: Dr. Holger Ruland

### 2022

- P. Kube, J. Dong, N. S. Bastardo, **H. Ruland**, R. Schlögl, J. T. Margraf, K. Reuter, A. Trunschke, Green synthesis of propylene oxide directly from propane, *Nature Communications*, 13 (2022) 7504. <https://doi.org/10.1038/s41467-022-34967-2>.
- O. Hegen, J. I. Salazar Gómez, R. Schlögl, **H. Ruland**, The potential of NO<sup>+</sup> and O<sub>2</sub><sup>+</sup> in switchable reagent ion proton transfer reaction time-of-flight mass spectrometry, *Mass Spectrometry Reviews*, n/a e21770. <https://doi.org/10.1002/mas.21770>.
- P. Schwiderowski, **H. Ruland**, M. Muhler, Current developments in CO<sub>2</sub> hydrogenation towards methanol: A review related to industrial application, *Current Opinion in Green and Sustainable Chemistry*, 38 (2022) 100688. <https://doi.org/10.1016/j.cogsc.2022.100688>.
- C. H. Pollok, C. Göbel, J. I. S. Gómez, R. Schlögl, **H. Ruland**, A Gas Generating System for Complex Gas Mixtures – Multifunctional Application in PTR Method Optimization and Downstream Methanol Synthesis, *Chemie Ingenieur Technik*, 94 (2022) 1438-1451. <https://doi.org/10.1002/cite.202200033>.
- S. Ristig, M. Poschmann, J. Folke, O. Gómez-Cápiro, Z. Chen, N. Sanchez-Bastardo, R. Schlögl, S. Heumann, **H. Ruland**, Ammonia Decomposition in the Process Chain for a Renewable Hydrogen Supply, *Chemie Ingenieur Technik*, 94 (2022) 1413-1425. <https://doi.org/10.1002/cite.202200003>.
- O. Hegen, J. I. Salazar Gómez, C. Grünwald, A. Rettke, M. Sojka, C. Klucken, J. Pickenbrock, J. Filipp, R. Schlögl, **H. Ruland**, Bridging the Analytical Gap Between Gas Treatment and Reactor Plants in Carbon2Chem®, *Chemie Ingenieur Technik*, 94 (2022) 1405-1412. <https://doi.org/10.1002/cite.202200015>.
- J. Schittkowski, B. Zeidler-Fandrich, T. Müller, R. Schlögl, **H. Ruland**, The Carbon2Chem® Laboratory in Oberhausen – A Workplace for Lab-Scale Setups within the Cross-Industrial Project, *Chemie Ingenieur Technik*, 94 (2022) 1397-1404. <https://doi.org/10.1002/cite.202200019>.
- J. Folke, K. Dembélé, F. Girgsdies, H. Song, R. Eckert, S. Reitmeier, A. Reitzmann, R. Schlögl, T. Lunkenbein, **H. Ruland**, Promoter effect on the reduction behavior of wuestite-based catalysts for ammonia synthesis, *Catalysis Today*, 387 (2022) 12-22. <https://doi.org/10.1016/j.cattod.2021.03.013>.

### 2021

- N. Sánchez-Bastardo, R. Schlögl, **H. Ruland**, Response to Comment on “Methane Pyrolysis for Zero-Emission Hydrogen Production: A Potential Bridge Technology from Fossil Fuels to a Renewable and Sustainable Hydrogen Economy”, *Industrial & Engineering Chemistry Research*, 60 (2021) 17795-17796. <https://doi.org/10.1021/acs.iecr.1c04435>.
- J. I. Salazar Gómez, M. Sojka, C. Klucken, R. Schlögl, **H. Ruland**, Determination of trace compounds and artifacts in nitrogen background measurements by proton transfer reaction time-of-flight mass spectrometry under dry and humid conditions, *Journal of Mass Spectrometry*, 56 (2021) e4777. <https://doi.org/10.1002/jms.4777>.
- N. Sánchez-Bastardo, R. Schlögl, **H. Ruland**, Methane Pyrolysis for Zero-Emission Hydrogen Production: A Potential Bridge Technology from Fossil Fuels to a Renewable and Sustainable Hydrogen Economy, *Industrial & Engineering Chemistry Research*, 60 (2021) 11855-11881. <https://doi.org/10.1021/acs.iecr.1c01679>.
- H. Fan, J. M. Folke, Z. Liu, F. Girgsdies, R. Imlau, **H. Ruland**, S. Heumann, J. Granwehr, R.-A. Eichel, R. Schlögl, E. Frei, X. Huang, Ultrathin 2D Fe-Nanosheets Stabilized by 2D Mesoporous Silica: Synthesis and Application in Ammonia Synthesis, *ACS Applied Materials & Interfaces*, 13 (2021) 30187-30197. <https://doi.org/10.1021/acsami.1c06771>.
- Y. Qiao, N. Theyssen, B. Spliethoff, J. Folke, C. Weidenthaler, W. Schmidt, G. Prieto, C. Ochoa-Hernández, E. Bill, S. Ye, **H. Ruland**, F. Schüth, W. Leitner, Synthetic ferripyrophyllite: preparation, characterization and catalytic application, *Dalton Transactions*, 50 (2021) 850-857. <https://doi.org/10.1039/D0DT03125A>.

### 2020

- D. Laudenschleger, **H. Ruland**, M. Muhler, Identifying the nature of the active sites in methanol synthesis over Cu/ZnO/Al<sub>2</sub>O<sub>3</sub> catalysts, *Nature Communications*, 11 (2020) 3898. <https://doi.org/10.1038/s41467-020-17631-5>.

- N. Sánchez-Bastardo, R. Schlögl, **H. Ruland**, Methane Pyrolysis for CO<sub>2</sub>-Free H<sub>2</sub> Production: A Green Process to Overcome Renewable Energies Unsteadiness, *Chemie Ingenieur Technik*, 92 (2020) 1596-1609. <https://doi.org/10.1002/cite.202000029>.
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- J. Folke, H. Song, J. Schittkowski, R. Schlögl, **H. Ruland**, Oxygen Poisoning in Laboratory Testing of Iron-Based Ammonia Synthesis Catalysts and its Potential Sources, *Chemie Ingenieur Technik*, 92 (2020) 1567-1573. <https://doi.org/10.1002/cite.202000100>.
- J. He, D. Laudenschleger, J. Schittkowski, A. Machoke, H. Song, M. Muhler, R. Schlögl, **H. Ruland**, Influence of Contaminants in Steel Mill Exhaust Gases on Cu/ZnO/Al<sub>2</sub>O<sub>3</sub> Catalysts Applied in Methanol Synthesis, *Chemie Ingenieur Technik*, 92 (2020) 1525-1532. <https://doi.org/10.1002/cite.202000045>.
- J. I. Salazar Gómez, C. Klucken, M. Sojka, G. von der Waydbrink, R. Schlögl, **H. Ruland**, The HüGaProp-Container: Analytical Infrastructure for the Carbon2Chem® Challenge, *Chemie Ingenieur Technik*, 92 (2020) 1514-1524. <https://doi.org/10.1002/cite.202000101>.
- **H. Ruland**, H. Song, D. Laudenschleger, S. Stürmer, S. Schmidt, J. He, K. Kähler, M. Muhler, R. Schlögl, CO<sub>2</sub> Hydrogenation with Cu/ZnO/Al<sub>2</sub>O<sub>3</sub>: A Benchmark Study, *ChemCatChem*, 12 (2020) 3216-3222. <https://doi.org/10.1002/cctc.202000195>.

## 2019

- J. I. Salazar Gómez, C. Klucken, M. Sojka, L. Masliuk, T. Lunkenbein, R. Schlögl, **H. Ruland**, Elucidation of artefacts in proton transfer reaction time-of-flight mass spectrometers, *Journal of Mass Spectrometry*, 54 (2019) 987-1002. <https://doi.org/10.1002/jms.4479>.

## 2018

- J. Schittkowski, **H. Ruland**, D. Laudenschleger, K. Girod, K. Kähler, S. Kaluza, M. Muhler, R. Schlögl, Methanol Synthesis from Steel Mill Exhaust Gases: Challenges for the Industrial Cu/ZnO/Al<sub>2</sub>O<sub>3</sub> Catalyst, *Chemie Ingenieur Technik*, 90 (2018) 1419-1429. <https://doi.org/10.1002/cite.201800017>.
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## 2017

- H. Song, D. Laudenschleger, J. J. Carey, **H. Ruland**, M. Nolan, M. Muhler, Spinel-Structured ZnCr<sub>2</sub>O<sub>4</sub> with Excess Zn Is the Active ZnO/Cr<sub>2</sub>O<sub>3</sub> Catalyst for High-Temperature Methanol Synthesis, *ACS Catalysis*, (2017) 7610-7622. <https://doi.org/10.1021/acscatal.7b01822>.
- P. Kangvansura, L. M. Chew, C. Kongmark, P. Santawaja, **H. Ruland**, W. Xia, H. Schulz, A. Worayingyong, M. Muhler, Effects of Potassium and Manganese Promoters on Nitrogen-Doped Carbon Nanotube-Supported Iron Catalysts for CO<sub>2</sub> Hydrogenation, *Engineering*, 3 (2017) 385-392. <https://doi.org/10.1016/j.eng.2017.03.013>.

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- L. M. Chew, W. Xia, H. Döder, P. Weide, **H. Ruland**, M. Muhler, On the role of the stability of functional groups in multi-walled carbon nanotubes applied as support in iron-based high-temperature Fischer–Tropsch synthesis, *Catalysis Today*, 270 (2016) 85-92. <https://doi.org/10.1016/j.cattod.2015.09.023>.
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