

List of publications: Dr. Holger Ruland

2020

- Salazar Gómez, J.I., Klucken, C., Sojka, M., von der Waydbrink, G., Schlögl, R., **Ruland, H.** (2020). The HüGaProp-Container: Analytical Infrastructure for the Carbon2Chem® Challenge *Chemie Ingenieur Technik* 92(10), 1514-1524. <https://doi.org/10.1002/cite.202000101>
- Sánchez-Bastardo, N., Schlögl, R., **Ruland, H.** (2020). Methane Pyrolysis for CO₂-Free H₂ Production: A Green Process to Overcome Renewable Energies Unsteadiness *Chemie Ingenieur Technik* 92(10), 1596-1609. [Technik https://doi.org/10.1002/cite.202000029](https://doi.org/10.1002/cite.202000029)
- Salazar Gómez, J.I., Takhtefouladi, E.S., Schlögl, R., **Ruland, H.** (2020). Design and Implementation of a Gas Generating System for Complex Gas Mixtures and Calibration Gases *Chemie Ingenieur Technik* 92(10), 1574-1585. <https://doi.org/10.1002/cite.202000110>
- Laudenschleger, D., **Ruland, H.**, Muhler, M. (2020). Identifying the nature of the active sites in methanol synthesis over Cu/ZnO/Al₂O₃ catalysts *Nature Communications* 11, 3898. <https://doi.org/10.1038/s41467-020-17631-5>
- He, J., Laudenschleger, D., Schittkowski, J., Machoke, A., Song, H., Muhler, M., Schlögl, R., **Ruland, H.** (2020). Influence of Contaminants in Steel Mill Exhaust Gases on Cu/ZnO/Al₂O₃ Catalysts Applied in Methanol Synthesis *Chemie Ingenieur Technik* 92(10), 1525-1532. <https://doi.org/10.1002/cite.202000045>
- Folke, M., Song, H., Schittkowski, J., Schlögl, R., **Ruland, H.** (2020). Oxygen Poisoning in Laboratory Testing of Iron-Based Ammonia Synthesis Catalysts and its Potential Sources *Chemie Ingenieur Technik* 92(10), 1567-1573. <https://doi.org/10.1002/cite.202000100>
- **Ruland, H.**, Song, H., Laudenschleger, D., Stürmer, S., Schmidt, S., He, J., Kähler, K., Muhler, M., Schlögl, R. (2020). CO₂ hydrogenation with Cu/ZnO/Al₂O₃: A benchmark study *ChemCatChem* 12(12), 3216-3222. <https://doi.org/10.1002/cctc.202000195>

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

2018

- Schittkowski, J., **Ruland, H.**, Laudenschleger, D., Girod, K., Kähler, K., Kaluza, S., Muhler, M., Schlögl, R. (2018). Methanol Synthesis from Steel Mill Exhaust Gases: Challenges for the Industrial Cu/ZnO/Al₂O₃ Catalyst *Chemie Ingenieur Technik* 90(10), 1419-1429. <https://doi.org/10.1002/cite.201800017>
- Song, H., Watermann, C., Laudenschleger, D., Yang, F., **Ruland, H.**, Muhler, M. (2018). The effect of the thermal pretreatment on the performance of ZnO/Cr₂O₃ catalysts applied in high-temperature methanol synthesis *Molecular Catalysis* 451, 76-86. <https://doi.org/10.1016/j.mcat.2017.10.033>

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- Song, H., Laudenschleger, D., Carey, J.J., Ruland, H., Nolan, M., Muhler, M. (2017). Spinel-Structured ZnCr_2O_4 with Excess Zn Is the Active $\text{ZnO}/\text{Cr}_2\text{O}_3$ Catalyst for High-Temperature Methanol Synthesis *ACS Catalysis* 7(11), 7610-7622. <https://doi.org/10.1021/acscatal.7b01822>
- Kangvansura, P., Chew, L.M., Kongmark, C., Santawaja, P., **Ruland, H.**, Xia, W., Schulz, H., Worayingyong, A., Muhler, M. (2017). Effects of Potassium and Manganese Promoters on Nitrogen-Doped Carbon Nanotube-Supported Iron Catalysts for CO_2 Hydrogenation *Engineering* 3(3), 385-392. <https://doi.org/10.1016/J.ENG.2017.03.013>

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- Anton, J. Nebel, J., Göbel, C., Gabrysch, T., Song, H., Froese, C., **Ruland, H.**, Muhler, M., Kaluza, S. (2016). CO Hydrogenation to Higher Alcohols over Cu-Co-Based Catalysts Derived from Hydrotalcite-Type Precursors *Topics in Catalysis* 59, 1361-1370. <https://doi.org/10.1007/s11244-016-0663-2>
- Dong, W., Chen, P., Xia, W., Weide, P., **Ruland, H.**, Kostka, A., Köhler, K., Muhler, M. (2016). Palladium Nanoparticles Supported on Nitrogen-Doped Carbon Nanotubes as a Release-and-Catch Catalytic System in Aerobic Liquid-Phase Ethanol Oxidation *ChemCatChem* 8(7), 1269-1273. <https://doi.org/10.1002/cctc.201501379>
- Chew, L.M., Xia, W., Düdler, H., Weide, P., **Ruland, H.**, Muhler, M. (2016). 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, 85-92. <https://doi.org/10.1016/j.cattod.2015.09.023>
- Anton, J. Nebel, J., Song, H., Froese, C., Weide, P., **Ruland, H.**, Muhler, M., Kaluza, S. (2016). The effect of sodium on the structure–activity relationships of cobalt-modified $\text{Cu}/\text{ZnO}/\text{Al}_2\text{O}_3$ catalysts applied in the hydrogenation of carbon monoxide to higher alcohols *Journal of Catalysis* 335, 175-186. <https://doi.org/10.1016/j.jcat.2015.12.016>

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- Dong, W., Reichenberger, S. Chu, S., Weide, P., **Ruland, H.**, Barcikowski, S., Wagener, P., Muhler, M. (2015). The effect of the Au loading on the liquid-phase aerobic oxidation of ethanol over Au/TiO_2 catalysts prepared by pulsed laser ablation *Journal of Catalysis* 330, 497-506. <https://doi.org/10.1016/j.jcat.2015.07.033>
- Bordoloi, A., Anton, J., **Ruland, H.**, Muhler, M., Kaluza, S. (2015). Metal-support interactions in surface-modified Cu-Co catalysts applied in higher alcohol synthesis *Catalysis Science & Technology* 5(7), 3603-3612. <https://doi.org/10.1039/c5cy00421g>
- Anton, J., **Ruland, H.**, Kaluza, S., Muhler, M. (2015). Fast and Reproducible Testing of Cu-Co-Based Catalysts Applied in the Conversion of Synthesis Gas to Ethanol and Higher Alcohols *Catalysis Letters* 145, 1374-1381. <https://doi.org/10.1007/s10562-015-1543-2>
- Anton, J., Nebel, J., Song, H., Froese, C., Weide, P., **Ruland, H.**, Muhler, M., Kaluza, S. (2015). Structure–activity relationships of Co-modified $\text{Cu}/\text{ZnO}/\text{Al}_2\text{O}_3$ catalysts applied in the synthesis of higher alcohols from synthesis gas *Applied Catalysis A: General* 505, 326-333. <https://doi.org/10.1016/j.apcata.2015.07.002>

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- **Ruland, H.**, Busser, W., Otto, H., Muhler, M. (2014). Effect of Constant-Rate Reduction on the Performance of a Ternary Cu/ZnO/Al₂O₃ Catalyst in Methanol Synthesis *Chemie Ingenieur Technik* 86(11), 1890-1893. <https://doi.org/10.1002/cite.201400065>

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- Peter, M., Fichtl, M.B., **Ruland, H.**, Kaluza, S., Muhler, M., Hinrichsen, O. (2012) Detailed kinetic modeling of methanol synthesis over a ternary copper catalyst *Chemical Engineering Journal* 203, 480-491. <https://doi.org/10.1016/j.cej.2012.06.066>

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