

## Publication list – Alexis Bordet

### 2023

37. Marchenko, N., Lacroix, L.-M., Ratel-Ramon, N., Leitner, W., Bordet, A.\*, Tricard, S\*. Bimetallic Fe<sub>x</sub>Pt<sub>100-x</sub> Nanoparticles Immobilized on Supported Ionic Liquid Phases as Hydrogenation and Hydrodeoxygenation Catalysts: Influence of the Metal Content on Activity and Selectivity. *ACS Appl. Nano Mater.* **2023**, 6, 20231-20239. <https://doi.org/10.1021/acsanm.3c03996>
36. Sodreau, A., Zahedi, H. G., Dervişoğlu, R., Kang, L., Menten, J., Zenner, J., Terefenko, N., DeBeer, S., Wiegand, T., Bordet, A.\*, Leitner, W\*. A Simple and Versatile Approach for the Low-Temperature Synthesis of Transition Metal Phosphide Nanoparticles from Metal Chloride Complexes and P(SiMe<sub>3</sub>)<sub>3</sub>. *Adv. Mater.* **2023**, 2306621. <https://doi.org/10.1002/adma.202306621>
35. Levin, N., Goclik, L., Walshus, H., Antil, N., Bordet, A.\*, Leitner, W\*. Decarboxylation and Tandem Reduction/Decarboxylation Pathways to Substituted Phenols from Aromatic Carboxylic Acids using Bimetallic Nanoparticles on Supported Ionic Liquid Phases as Multifunctional Catalysts. *J. Am. Chem. Soc.* **2023**, 145, 22845-22854. <https://doi.org/10.1021/jacs.3c09290>
34. Zhang, Y., El Sayed, S., Kang, L., Sanger, M., Wiegand, T., Jessop, P. G., DeBeer, S., Bordet, A.\*, Leitner, W.\* Adaptive Catalysts for the Selective Hydrogenation of Bicyclic Heteroaromatics using Ruthenium Nanoparticles on a CO<sub>2</sub>-Responsive Support. *Angew. Chem. Int. Ed.* **2023**, e202311427. <https://doi.org/10.1002/anie.202311427>
33. Bordet, A.\*, Leitner, W.\* Adaptive Catalytic Systems for Chemical Energy Conversion. *Angew. Chem. Int. Ed.* **2023**, e202301956. <https://doi.org/10.1002/anie.202301956>
32. Louis Anandaraj, S. J., Kang, L., DeBeer, S., Bordet, A.\*, Leitner, W.\* Catalytic Hydrogenation of CO<sub>2</sub> to Formate Using Ruthenium Nanoparticles Immobilized on Supported Ionic Liquid Phases. *Small* **2023**, 2206806. <https://doi.org/10.1002/smll.202206806>

### 2022

31. Han, C., Zenner, J., Johny, J., Kaeffer, N.\* Bordet, A.\*, Leitner, W. Electrocatalytic Hydrogenation of Alkenes with Pd/Carbon Nanotubes at an Oil-Water Interface. *Nat. Catal.* **2022**, 5, 1110-1119. <https://doi.org/10.1038/s41929-022-00882-4>
30. Kalsi, D., Louis Anandaraj, J. L., Durai, M., Weidenthaler, C., Emondts, M., Nolan, S. P., Bordet, A.\*, Leitner, W.\* One-Pot Multicomponent Synthesis of Allyl and Alkylamines Using a Catalytic System Composed of Ruthenium Nanoparticles on Copper *N*-Heterocyclic Carbene-Modified Silica. *ACS Catal.* **2022**, 12, 14902-14910. <https://doi.org/10.1021/acscatal.2c04044>
29. Kacem, S., Qiao, Y., Wirtz, C., Theyssen, N., Bordet, A.\*, Leitner, W.\* Supercritical Carbon Dioxide as Reaction Medium for Selective Hydrogenation of Fluorinated Arenes. *Green Chem.* **2022**, 24, 8671-8676. <https://doi.org/10.1039/D2GC02623F>
28. Lin, S.-H., Hetaba, W., Chaudret, B., Leitner, W., Bordet, A.\* Copper-Decorated Iron Carbide Nanoparticles Heated by Magnetic Induction as Adaptive Multifunctional Catalysts for the Selective Hydrodeoxygenation of Aldehydes. *Adv. Energy Mater.* **2022**, 2201783. <https://doi.org/10.1002/aenm.202201783>

27. Godlik, L., Walschus, W., Bordet, A.\*, Leitner, W.\* Selective Hydrodeoxygenation of Acetophenone Derivatives using a Fe<sub>25</sub>Ru<sub>75</sub>@SILP Catalyst: A Practical Approach to the Synthesis of Alkyl Phenols and Anilines. *Green Chem.* **2022**, *24*, 2937-2945. <https://doi.org/10.1039/d1gc04189d>
26. Sisodiya, S., Van Stappen, C., Rengshausen, S., Han, C., Sodreau, A., Weidenthaler, C., Tricard, S., DeBeer, S., Chaudret, B., Bordet, A.\*, Leitner, W.\* Bimetallic M<sub>x</sub>Ru<sub>100-x</sub> Nanoparticles (M = Fe, Co) on Supported Ionic Liquid Phases (M<sub>x</sub>Ru<sub>100-x</sub>@SILP) as Hydrogenation Catalysts: Influence of M and M:Ru ratio on Activity and Selectivity. *J. Catal.* **2022**, *407*, 141-148. <https://doi.org/10.1016/j.jcat.2022.01.030>

## 2021

25. Kreissl, H., Jin, J., Lin, S.-H., Schüette, D., Störtte, S., Levin, N., Chaudret, B., Vorholt, A. J., Bordet, A.\*, Leitner, W. Commercial Cu<sub>2</sub>Cr<sub>2</sub>O<sub>5</sub> Decorated with Iron Carbide Nanoparticles as Multifunctional Catalyst for Magnetically Induced Continuous Flow Hydrogenation of Aromatic Ketones. *Angew. Chem. Int. Ed.* **2021**, *60*, 26639-26646. <https://doi.org/10.1002/anie.202107916>
24. Zenner, J., Moos, G. Luska, K. L., Bordet, A.\*, Leitner, W.\* Rh NPs Immobilized on Phosphonium-based Supported Ionic Liquid Phases (Rh@SILPs) as Hydrogenation Catalysts. *Chimia* **2021**, *75*, 724-732. <https://doi.org/10.2533/chimia.2021.724>.
23. Bordet, A., El Sayed, S., Sanger, M., Boniface, K. J., Kalsi, D., Luska, K. L., Jessop, P. G., Leitner, W.\* Selectivity control in hydrogenation through adaptive catalysis using ruthenium nanoparticles on a CO<sub>2</sub>-responsive support. *Nat. Chem.* **2021**, *13*, 916-922. <https://doi.org/10.1038/s41557-021-00735-w>
22. Bordet, A.\*, Leitner, W.\* Metal Nanoparticles Immobilized on Molecularly Modified Surfaces: Versatile Catalytic Systems for Controlled Hydrogenation and Hydrogenolysis. *Acc. Chem. Res.* **2021**, *54*, 2144-2157 <https://doi.org/10.1021/acs.accounts.1c00013>
21. Rengshausen, S., Van Stappen, C., Levin, N., Tricard, S., Luska, K. L., DeBeer, S., Chaudret, B., Bordet, A.\*, Leitner, W.\* Organometallic Synthesis of Bimetallic Cobalt-Rhodium Nanoparticles in Supported Ionic Liquid Phases (Co<sub>x</sub>Rh<sub>100-x</sub>@SILP) as Catalysts for the Selective Hydrogenation of Multifunctional Aromatic Substrates. *Small* **2021**, 2006683. <https://doi.org/10.1002/smll.202006683>

## 2020

20. Moos, G., Emondts, M., Bordet, A.\*, Leitner, W.\* Selective Hydrogenation and Hydrodeoxygenation of Aromatic Ketones to Cyclohexane Derivatives Using a Rh@SILP Catalyst. *Angew. Chem. Int. Ed.* **2020**, *59*, 11977-11983. <https://doi.org/10.1002/anie.201916385>
19. Bordet, A., Moos, G., Welsh, C., Licence, P., Luska, K. L., Leitner, W.\* Molecular Control of the Catalytic Properties of Rhodium Nanoparticles in Supported Ionic Liquid Phase (SILP) Systems. *ACS Catal.* **2020**, *10*, 13904-13912. <https://dx.doi.org/10.1021/acscatal.0c035597>
18. Estes, D.P., Leutzsch, M., Schubert, L., Bordet, A., Leitner, W.\* The Effect of Ligand Electronics on the Reversible Catalytic Hydrogenation of CO<sub>2</sub> to Formic Acid using Ruthenium Polyhydride Complexes: A Thermodynamic and Kinetic Study. *ACS Catal.* **2020**, *10*, 2990-2998. <https://doi.org/10.1021/acscatal.0c00404>
17. El Sayed, S., Bordet, A., Weidenthaler, C., Hetaba, W., Luska, K. L., Leitner, W.\* Selective Hydrogenation of Benzofurans Using Ruthenium Nanoparticles in Lewis Acid-Modified Ruthenium-Supported Ionic Liquid Phases. *ACS Catal.* **2020**, *10*, 2124-2130. <https://dx.doi.org/10.1021/acscatal.9b05124>

16. Kaithal, A. Kalsi, D., Krishnakumar, V., Pattanaik, S., Bordet, A., Leitner, W., Gunanathan, C.\* Ruthenium-Catalyzed Selective Hydroboronolysis of Ethers. *ACS Catal.* **2020**, *10*, 14390-14397. <https://dx.doi.org/10.1021/acscatal.0c04269>
15. Goclik, L., Offner-Marko, L., Bordet, A.\*, Leitner, W.\* Selective Hydrodeoxygenation of Hydroxyacetophenones to Ethyl-Substituted Phenol Derivatives Using a FeRu@SILP Catalyst. *Chem. Commun.* **2020**, *56*, 9509-9512. <https://doi.org/10.1039/D0CC03695A>
14. Kacem, S., Emondts, M., Bordet, A.\*, Leitner, W.\* Selective hydrogenation of fluorinated arenes using rhodium nanoparticles on molecularly modified silica. *Cat. Sci. Tech.* **2020**, *10*, 8120-8126. <https://doi.org/10.1039/d0cy01716g>
13. Chatterjee, B., Kalsi, D., Kaithal, A., Bordet, A., Leitner, W., Gunanathan, C.\* One-pot Dual Catalysis for the Hydrogenation of Heteroarenes and Arenes. *Cat. Sci. Tech.* **2020**, *10*, 5163-5170. <https://doi.org/10.1039/D0CY00928H>

## 2019

12. Strohmamm, M, Bordet, A., Vorholt, A. J., Leitner, W.\* Tailor-Made Biofuel 2-butyltetrahydrofuran from the Continuous Flow Hydrogenation and Deoxygenation of Furfuralacetone. *Green Chem.* **2019**, *21*, 6299. <https://doi.org/10.1039/c9gc02555c>
11. Bordet, A., Landis, R., Lee, Y., Tonga, G., Asensio, J., Li, C., Fazzini, P.-F., Soulantica, K., Rotello, V., Chaudret, B\*. Water-Dispersible and Biocompatible Iron Carbide Nanoparticles with High Specific Absorption Rate. *ACS Nano* **2019**, *13*, 2870-2878. <https://doi.org/10.1021/acsnano.8b05671>
10. Kale, A. S, Asensio, J. M., Estrader, M., Werner, M., Bordet, A., Yi, D., Marbaix, J., Fazzini, P.-F., Soulantica, K., Chaudret, B\*. Iron Carbide or Iron Carbide / Cobalt Nanoparticles for Magnetically-Induced CO<sub>2</sub> Hydrogenation over Ni/SiRAIOx Catalysts. *Cat. Sci. Tech.* **2019**, *9*, 2601-2607. <http://doi.org/10.1039/C9CY00437H>
9. Rengshausen, S., Etscheidt, F., Großkurth, J., Luska, K. L., Bordet, A., Leitner, W.\* Catalytic Hydrogenolysis of Substituted Diaryl Ethers by Using Ruthenium Nanoparticles on an Acidic Supported Ionic Liquid Phase (Ru@SILP-SO<sub>3</sub>H) *Synlett* **2019**, *30*, 405-412. <https://doi.org/10.1055/s-0037-1611678>

## 2018

8. Offner-Marko, L., Bordet, A., Moos, G., Tricard, S., Rengshausen, S., Chaudret, B., Luska, K. L., Leitner, W\*. Bimetallic Nanoparticles in Supported Ionic Liquid Phases as Multifunctional Catalysts for the Selective Hydrodeoxygenation of Aromatic Substrates. *Angew. Chem. Int. Ed.* **2018**, *57*, 12721-12726. <https://doi.org/10.1002/anie.201806638>
7. Bordet, A., Asensio, J.M., Soulantica, K., Chaudret, B\*. Enhancement of Carbon Oxides Hydrogenation on Iron-Based Nanoparticles by In-Situ Water Removal. *ChemCatChem* **2018**, *10*, 4047-4051. <https://doi.org/10.1002/cctc.201800821>
6. Niether, C., Faure, S., Bordet, A., Deseure, J., Chatenet, M.\*, Carrey, J.\*, Chaudret, B., Rouet, A. Improved Water Electrolysis Using Magnetic Heating of FeC–Ni Core–Shell Nanoparticles. *Nat. Energy* **2018**, *3*, 476-483. <https://doi.org/10.1038/s41560-018-0132-1>
5. Baletto, F., Boeije, M., Bordet, A., Walker, J., Whiston, K., Willock, D. *et al.* Application of New Nanoparticle Structures as Catalysts: General Discussion. *Faraday Discussions* **2018**, *208*, 575-593. <https://doi.org/10.1039/C8FD90016G>

4. Adishev, A., Arrigo, R., Bordet, A., Walker, J., Whiston, K. *et al.* Control of Catalytic Nanoparticle Synthesis: General Discussion. *Faraday Discussions* **2018**, 208, 471-495. <https://doi.org/10.1039/C8FD90015A>

## 2016

3. Bordet, A., Lacroix, L.-M., Fazzini, P.-F., Carrey, J., Soulantica, K., Chaudret, B\*. Magnetically Induced Continuous CO<sub>2</sub> Hydrogenation Using Composite Iron Carbide Nanoparticles of Exceptionally High Heating Power. *Angew. Chem. Int. Ed.* **2016**, 55, 15894-15898. <https://doi.org/10.1002/anie.201609477>
2. Bordet, A., Lacroix, L.-M., K. Soulantica, K., Chaudret, B\*. A New Approach to the Mechanism of Fischer–Tropsch Syntheses Arising from Gas Phase NMR and Mass Spectrometry. *ChemCatChem* **2016**, 8, 1727-1731. <https://doi.org/10.1002/cctc.201600245>
1. Luska, K. L., Bordet, A., Tricard, S., Sinev, I., Grünert, W., Chaudret, B., Leitner, W\*. Enhancing the Catalytic Properties of Ruthenium Nanoparticle-SILP Catalysts by Dilution with Iron. *ACS Catal.* **2016**, 6, 3719-3726. <https://doi.org/10.1021/acscatal.6b00796>

## Patents

2. Levin, N., Goclik, L., Walshus, H., Bordet, A., Leitner, W. (2023) Catalytic Decarboxylation Reactions using Ionic Liquids. *Patent N°EP23163747A1*.
1. Bordet, A., Soulantica, K. Chaudret, B. (2017) Iron Carbide Nanoparticles, Method for Preparing Same and Use Thereof for Heat Generation. *Patent N°WO2017103492A2*.