

## R E S U M E

**May-2025**

### 1. PERSONAL DETAILS

Full Name: **Charlotte Vogt**  
Identity No: 890912660  
Date of birth: 28/9/1991  
Place of birth: Utrecht  
Marital status: married  
Phone numbers: 0000000000  
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Orcid Account: 0000-0002-0562-3237



### 2. ACADEMIC DEGREES

2020 PhD (cum laude) , Faculty of Chemistry, Utrecht University, Netherlands  
2015 MSc (cum laude) , Faculty of Chemistry, Utrecht University, Netherlands  
2013 BSc , Faculty of Chemistry, Utrecht University, Netherlands

### 3. ACADEMIC APPOINTMENTS

2021 - Present Assistant Professor, Faculty of Chemistry, Technion-Israel Institute of Technology, Haifa, Israel  
2020 - 2021 Postdoctoral fellow, Faculty of Chemistry, Hebrew University of Jerusalem and Weizmann Institute of Science, Rehovot, Israel  
2019 - 2020 Visiting Fellow, Faculty of Chemistry, Weizmann Institute of Science, Rehovot, Israel

### 4. PROFESSIONAL EXPERIENCE (OUTSIDE ACADEMIA)

2024 - Present Founder and head of science, Ceal  
2015 - 2015 Investor relations intern, Albemarle

2015 - 2017	Market analysis and consulting, Freelance
2014 - 2015	Young council member, Rabobank

## **5. RESEARCH INTERESTS (BRIEFLY)**

- Catalysis
- Operando spectroscopy
- Nanotechnology/nanoparticles
- Energy transition

## **6. TEACHING EXPERIENCE**

2016 - 2019	Catalysis, Teacher, 3rd year Bachelor course, Utrecht University
2017 - 2019	Biophysics, Instructor, 1st year Bachelor course, Utrecht University
2021 - Present	Technologies for Clean Energy, Lecturer, International Course, Technion-Israel Institute of Technology, Haifa
2022 - Present	General Chemistry Laboratory, Coordinator, Undergraduate lab course, Technion-Israel Institute of Technology, Haifa
2022 - Present	Heterogeneous Catalysis, Lecturer, Graduate course, Technion-Israel Institute of Technology, Haifa
2022 - Present	Introduction to Research in Chemistry, Coordinator, Undergraduate course, Technion-Israel Institute of Technology, Haifa

## **7. ACTIVITIES**

2022 - Present	Executive Committee Catalysis Center
2023 - Present	Executive Committee Sustainability Frontier

## **8. DEPARTMENTAL ACTIVITIES**

2022 - Present	Chemistry Faculty Representative - Interdepartmental Committee for Biotechnology, Technion-Israel Institute of Technology, Haifa
2022 - Present	Chemistry Faculty Representative - Biotechnology and Food Engineering, Technion-Israel Institute of Technology, Haifa
2022 - Present	Teaching in English Advisory Committee, Technion-Israel Institute of Technology, Haifa

## **9. PUBLIC PROFESSIONAL ACTIVITIES**

2019 - Present	Frequent Reviewer, Nature, Nature Catalysis, Nature Materials, Nature Energy, Nature Communications, ACS Catalysis, ChemCatChem, Catalysis Today, Journal of Physical Chemistry, ACS Sustainable Chemistry & Engineering, Catalysts, PhysChem, Review of Scientific Instruments, Chemistry Methods, Chemical Reviews, National Science Review
2023 - Present	Early Career Editorial Board, Chemical Reviews
2023 - Present	Early Career Editorial Board, Journal of Catalysis
2023 - Present	Editorial Board, Catalysis Today

## **10. MEMBERSHIP IN PROFESSIONAL SOCIETIES**

- Member of the Royal Dutch Chemical Society
- Member of the American Chemical Society
- Member and Alumnus of the Netherlands Institute for Catalysis Research
- Member of the Israel Chemical Society

## **11. FELLOWSHIPS, AWARDS AND HONORS**

2018	Best Lecture Award, Materials, Characterization, Catalysis conference, ETH Zurich
2019	Fellowship, VATAT Fellowship "for outstanding international students", Weizmann Institute of Science, Rehovot
2019	Outstanding Female Scientist prize, Israel Vacuum Society and Intel, Israel Vacuum Society and Intel
2020	Fellowship, Niels Stensen Fellow "for outstanding young scientists with exceptional social commitment", Stichting Benevolentia
2021	'Forbes 30 under 30', Europe, Forbes
2022	Clara Immerwahr Award, Berlin University Alliance, UniSysCat
2022	Henri Gutwirth Research Prize, Technion, Technion-Israel Institute of Technology, Haifa
2023	"Talented 12", Chemical and Engineering News, American Chemical Society
2023	40 under 40, ICE.co.il, Technion-Israel Institute of Technology, Haifa
2023	Beilby Medal and Prize, Institute of Materials, Minerals and Mining (IOM3), the Royal Society of Chemistry, and the Society of Chemical Industry
2023	First Eurotech Future Award, Eurotech Universities Alliance, Technion-Israel Institute of Technology, Haifa
2024	Martinus van Marumprize, Chemistry and Chemical Engineering, Royal Holland Society of Sciences

- 2025 Umbrella Award, Umbrella Cooperation of the Technion – Israel Institute of Technology, RWTH Aachen University and Forschungszentrum Jülich, Technion-Israel Institute of Technology, Haifa
- 2025 Uzi and Michal Halevy Award, Innovative Applied Engineering, Technion-Israel Institute of Technology, Haifa

## **12. GRADUATE STUDENTS**

### **Completed PhD theses**

### **Completed MSc Theses**

- 2018 Ellen Sterk , Density functional theory and microkinetic modelling of structure sensitivity in carbon dioxide hydrogenation over nickel, (**Charlotte Vogt** Co-Supervisor with Bert Weckhuysen)
- 2018 Henk Wiersma , Socio-Economic Analysis of the Sabatier Process, (**Charlotte Vogt** Co-Supervisor with Bert Weckhuysen)
- 2019 Jelle Kranenborg , Structure sensitivity in steam and dry methane reforming, (**Charlotte Vogt** Co-Supervisor with Bert Weckhuysen)
- 2024 Elias Haddad , In-situ spectroscopic investigation of electrocatalytic carbon dioxide reduction by polyoxometalate electrocatalysts, (**Charlotte Vogt** Co-Supervisor with -)
- 2025 Artiom Nesterenko , Operando Spectroscopic Insights into the Electrocatalytic Ammonia Oxidation Reaction over Platinum, (**Charlotte Vogt** Co-Supervisor with -)
- 2025 Assaf Licht , Stainless Steel Electrodes for Direct Seawater Electrolysis: Electrocatalytic Activity and Stability of Types 316, 304 and 2205, (**Charlotte Vogt** Co-Supervisor with -)
- 2025 Or Mayraz , Exploring Ocean-Based Carbon Capture: Unraveling Challenges Opportunities and the Role of Electrochemical Mineralization Catalysis, (**Charlotte Vogt** Co-Supervisor with -)

### **PhD Theses in Progress**

- 2025 Daniel Sinausia , Unravelling Cu nanoparticle size effects in electrocatalytic CO<sub>2</sub> reduction, (**Charlotte Vogt** Co-Supervisor with -)
- 2025 Rutvija Dange , Support effects in plasmacatalytic ammonia synthesis, (**Charlotte Vogt** Co-Supervisor with -)
- 2026 Noam Zyser , The effect of solvation in catalysis, (**Charlotte Vogt** Co-Supervisor with -)
- 2026 Tal Rosner , Operando spectroscopic investigations of the Haber Bosch process, (**Charlotte Vogt** Co-Supervisor with -)

- 2027      Deepraj Verma , Fe nanoparticles in electrocatalytic ammonia synthesis, (**Charlotte Vogt** Co-Supervisor with - )
- 2027      GTIIT - Yao Defu , Supported metal catalysts for carbon oxides conversion: catalyst design and active site characterization, (**Charlotte Vogt** Co-Supervisor with Ziyi Zhong )
- 2029      Artiom Nesterenko , Electrooxidation Reactions over Pt, (**Charlotte Vogt** Co-Supervisor with - )
- 2029      Zoe Yagil , The electric double layer in CO<sub>2</sub> reduction over copper, (**Charlotte Vogt** Co-Supervisor with - )

### **MSc Theses in Progress**

- 2025      Jiajing Zhong , Electrolysis with high-entropy metal oxides, (**Charlotte Vogt** Co-Supervisor with Weiran Zheng )
- 2025      Noam Karo , Advancing ocean based carbon dioxide removal through electrochemical mineralization, (**Charlotte Vogt** Co-Supervisor with - )
- 2025      Sijie Chen , Co-reduction of CO<sub>2</sub> and N<sub>2</sub> for urea electrochemical synthesis, (**Charlotte Vogt** Co-Supervisor with Weiran Zheng )
- 2027      Yara Hijaze , Plasma catalysis for urea synthesis, (**Charlotte Vogt** Co-Supervisor with - )

### **13. SPONSORED LONG-TERM VISITORS AND POST-DOCTORAL ASSOCIATES**

Dr. Pankaj Prajapati (Past)  
 Dr. Anushree Dutta (Past)  
 Dr. Dennis Leybo  
 Dr. Gennadiy Itov

### **14. RESEARCH GRANTS**

#### **Competitive**

- 2022 - 2022      German Israeli Fund (GIF), Unravelling Nanoparticle Size Effects in CO<sub>2</sub> Electroreduction over Copper by Potential-Modulated Spectroscopy, 25000 EUR, **Charlotte Vogt** (PI)
- 2023 - 2028      European Research Council (ERC), Hidden in the Noise: Transient Details of Nanoparticle-Catalyzed Reactions Under Challenging Conditions, 1812500 EUR, **Charlotte Vogt** (PI)

2025 - 2026      Binational Agricultural Research and Development Fund (BARD), Scalable mechanocatalytic nitrogen fixation for on-site fertilizer production - Towards improving accessibility and reducing greenhouse gas emissions, 50000 USD, **Charlotte Vogt** (PI), Carsten Sievers, co-PI (PI)

## Industrial and other sources

2022 - 2023      T-Start - Israel Innovation Authority, Scaling Up Highly Active Nanoengineered Solid Oxide Electrolyzer and Fuel Cell Electrodes, 100000, USD, **Charlotte Vogt** (PI)

2022 - 2025      Ministry of Energy, Innovative Ammonia Electrode Materials for Large Scale Energy Storage and Fuel Cells, 596200, NIS, **Charlotte Vogt** (PI)

2023 - 2024      Israel Innovation Authority (KAMIN), Thermocatalytic Alternatives to Urea Production, 880000, NIS, **Charlotte Vogt** (PI)

2024 - 2025      GTIIT - Technion Seed Grant, Correlative In Situ Analysis of NiOOH Electrocatalysts for Selective Ammonia Electrooxidation, 30000, USD, **Charlotte Vogt** (CO), Weiran Zheng (co-PI)

2025 - 2029      VATAT, From waste to alternative fuels, 1478000, NIS, **Charlotte Vogt** (CO), Various co-PIs

## 15. PUBLICATIONS

### 15.1 Theses

**Charlotte Vogt** (2020) "Structure Sensitivity in Catalysis" Bert M. Weckhuysen, Utrecht University

### 15.2 Refereed papers in professional journals

Combined operando UV/Vis/IR spectroscopy reveals the role of methoxy and aromatic species during the methanol-to-olefins reaction over H-SAPO-34

Qingyun Qian, **Charlotte Vogt**, Mohamed Mokhtar, Abdullah M. Asiri, Javier Ruiz-Martinez and Bert M. Weckhuysen

ChemCatChem, 2014, 6, 3396-3408.

<https://doi.org/10.1002/cctc.201402714>

The effect of feedstock and catalyst impurities on the methanol-to-olefin reaction over H-SAPO-34 molecular sieves

**Charlotte Vogt**, Bert M. Weckhuysen, Javier Ruiz-Martínez

ChemCatChem, 2016, 9, 183-194

<https://doi.org/10.1002/cctc.201600860>

Unravelling structure sensitivity in CO<sub>2</sub> hydrogenation over nickel

**Charlotte Vogt**, Esther Groeneveld, Gerda Kamsma, Maarten Nachtegaal, Li Lu, Christopher J. Kiely, Peter H. Berben, Florian Meirer, Bert M. Weckhuysen

Nature Catalysis, 2018, 1, 127-134.

<https://doi.org/10.1038/s41929-017-0016-y>

- “Highly cited paper”

The renaissance of the Sabatier reaction and its applications on Earth and in space

**Charlotte Vogt**, Matteo Monai, Gert Jan Kramer and Bert M. Weckhuysen

Nature Catalysis, 2019, 2, 188-197.

<https://doi.org/10.1038/s41929-019-0244-4>

- “Highly cited paper”

Capturing the genesis of an active Fischer–Tropsch synthesis catalyst with operando X-ray nanospectroscopy

Ilse K. van Ravenhorst \$, **Charlotte Vogt** \$, Koen Bossers, José G. Moya-Cancino, David Vine, Frank M. F. de Groot, Florian Meirer and Bert M. Weckhuysen

\$Authors contributed equally to the work

Angewandte Chemie International Edition 2018, 57, 11957-11962.

<https://doi.org/10.1002/anie.201806354>

- “Hot paper”

Understanding carbon dioxide activation and carbon-carbon coupling over nickel

**Charlotte Vogt**, Matteo Monai, Ellen B. Sterk, Jonas Palle, Bart Zijlstra, Esther Groeneveld, Peter H. Berben, Jelle Boereboom, Emiel J. M. Hensen, Florian Meirer, Ivo A. W. Filot, Bert M. Weckhuysen

Nature Communications, 2019, 10, 5330.

<https://doi.org/10.1038/s41467-019-12858-3>

- Selected as “1 of the 50 most influential papers in the field of Chemistry and Materials Science”

Stable niobia-supported nickel catalysts for the hydrogenation of carbon monoxide to hydrocarbons

Carlos Hernández Mejía, **Charlotte Vogt**, Bert M. Weckhuysen, Krijn P. de Jong

Catalysis Today, 2020, 343, 56-62.,

<https://doi.org/10.1016/j.cattod.2018.11.036>

In Situ Shell-Isolated Nanoparticle Enhanced Raman Spectroscopy of Nickel-Catalyzed Hydrogenation Reactions

Caterina S. Wondergem, Josepha J. G. Kromwijk, Mark Slagter, Wilbert L. Vrijburg, Emiel J. M. Hensen, Matteo Monai, **Charlotte Vogt**, Bert M. Weckhuysen

ChemPhysChem, 2020, 21, 625-632.

<https://doi.org/10.1002/cphc.201901162>

Structure sensitivity in steam and dry methane reforming over nickel: Activity and carbon formation

**Charlotte Vogt**, Jelle Kranenburg, Matteo Monai, Bert M. Weckhuysen

ACS Catalysis, 2020, 10, 1428-1438.

<https://doi.org/10.1021/acscatal.9b04193>

Alkali promotion in the formation of CH<sub>4</sub> from CO<sub>2</sub> and renewably produced H<sub>2</sub> over supported nickel catalysts

**Charlotte Vogt**, Jochem Wijten, Chantal Leal Madeira, Oscar Kerkenaar, Kangming Xu, Rupert Holzinger, Matteo Monai, Bert M. Weckhuysen

ChemCatChem, 2020, 12, 2792-2800.

<https://doi.org/10.1002/cctc.202000327>

Understanding the activation of ZSM-5 by Phosphorus: Localizing phosphate groups in the pores of phosphate-stabilized ZSM-5

Jaap N. Louwen, Lambert van Eijck, **Charlotte Vogt**, Eelco T.C. Vogt

Chemistry of Materials, 2020, 32, 9390–9403.

<https://doi.org/10.1021/acs.chemmater.0c03411>

On the Cobalt Carbide Formation in a Co/TiO<sub>2</sub> Fischer-Tropsch Synthesis Catalyst as Studied by High-Pressure, Long-Term Operando X-Ray Absorption Spectroscopy and Diffraction

Ilse K. van Ravenhorst \$, Adam S. Hoffman \$, **Charlotte Vogt** \$, Alexey Boubnov, Nirmalendu Patra, Ramon Oord, Cem Akatay, Florian Meirer, Simon R. Bare, Bert M. Weckhuysen

\$ Authors contributed equally to the work

ACS Catalysis, 2021, 11, 2956-2967.

<https://doi.org/10.1021/acscatal.0c04695>

- Cover feature.

Reactant-induced and size-dependent effects of metal nanoparticle restructuring during catalysis

**Charlotte Vogt**, Esther Groeneveld, Matteo Monai, Davide Ferri, Rutger A. van Santen, Maarten Nachtegaal, Raymond R. Unocic, Anatoly Frenkel, Florian Meirer, Bert M. Weckhuysen

Nature Communications, 2021, 12, 7096.

<https://doi.org/10.1038/s41467-021-27474-3>

Molecular Transition Metal Oxide Electrocatalysts for the Reversible Carbon Dioxide-Carbon Monoxide Transformation

Dima Azaiza-Dabbah, **Charlotte Vogt**, Fei Wang, Albert Masip-Sanchez, Coen de Graaf, Josep M. Poblet, Eynat Haviv, Ronny Neumann

Angewandte Chemie International Edition, 2022, 60, 2-10.

<https://doi.org/10.1002/anie.202112915>

Adsorbate bond number dependency for sigma- and pi-bonds in linear scaling relationships

**Charlotte Vogt**

Journal of Physical Chemistry C, 2023, 127, 11, 5416–5424.

<https://doi.org/10.1021/acs.jpcc.3c00727>

Restructuring of titanium oxide overlayers over nickel nanoparticles during catalysis

Matteo Monai, Kellie Jenkinson, Angela E. M. Melcherts, Jaap N. Louwen, Ece A. Irmak, Sandra Van Aert, Thomas Altantzis, **Charlotte Vogt**, Ward van der Stam, Tomas Duchon, Bretislav Smid, Esther Groeneveld, Peter Berben, Sara Bals, and Bert M. Weckhuysen

Science, 2023, 380, 644-651.

<https://doi.org/10.1126/science.adf6984>

Integrated Carbon Dioxide Capture and Fixation via Aqueous Phase Hydrogenation of Carbonates

Xiaochen Zhang, Mengzhu Li, Ang Li, Yuchen Deng, Mi Peng, **Charlotte Vogt**, Matteo Monai, Junxian Gao, Xuetao Qin, Yao Xu, Qiaolin Yu, Meng Wang, Guofu Wang, Zheng Jiang, Xiaodong Han, Casper Brady, Wei-Xue Li, Jin-Xun Liu, Bingjun Xu, Bert M. Weckhuysen, and Ding Ma

CCS Chemistry, 2024, 6, 1174-1183

<https://doi.org/10.31635/ccschem.023.202303594>

Correlative In Situ Analysis of the Role of Oxygen on Ammonia Electrooxidation Selectivity on NiOOH Surfaces

Jing Chen, Sijie Chen, Jinghao Gao, Xiaowu Huang, Elissaios Stavrou, **Charlotte Vogt**, Weiran Zheng

Journal of Catalysis, 2024, 438, 115720.

<https://doi.org/10.1016/j.jcat.2024.115720>

Heterometallic Transition Metal Oxides Containing Lewis Acids as Molecular Catalysts for the Reduction of Carbon Dioxide to Carbon Monoxide with Bimodal Activity

Dima Azaiza-Dabbah, Elias Haddad, Fei Wang, Albert Solé-Duara, Raanan Carmieli, Josep M. Poblet, **Charlotte Vogt**, and Ronny Neumann

Journal of the American Chemical Society, 2024, 146, 27871-27885.

<https://doi.org/10.1021/jacs.4c10412>

Carbon Dioxide Sequestration through Mineralization from Seawater: The Interplay of Alkalinity, pH, and Dissolved Inorganic Carbon

Noam Karo, Gennadiy Itov, Or Mayraz, **Charlotte Vogt**

Chemical Engineering Journal, 2024, 500, 156380.

<https://doi.org/10.1016/j.cej.2024.156380>

## Accepted (or in press) papers

Decoding Double Layer Dynamics for Carbon Dioxide Electroreduction over Cu

Daniel Sinausia, Noam Zisser, Thierry Kilian Slot, David Eisenberg, Florian Meirer, and **Charlotte Vogt**

Angewandte Chemie, 2025, Accepted Article, ASAP Online:

<https://doi.org/10.1002/anie.202423177>.

- Front cover feature: <https://doi.org/10.1002/anie.202509575>.

Sustainable Fuels from CO<sub>2</sub>-rich synthesis gas via Fischer-Tropsch technology

Bart C.A. de Jong, Konstantijn T. Rommens, Tal Rosner, Paul van den Tempel, Léon Rohrbach, G. Leendert Bezemer, Hero J. Heeres, Mark Saeys, **Charlotte Vogt** and Jingxiu Xie

ACS Catalysis, 2025, Accepted Article, ChemRxiv: 10.26434/chemrxiv-2025-krwvb.

Selective Ammonia Electrooxidation on RuO<sub>2</sub>: Competitive and Synergistic Interplay between Ammonia and Hydroxide

Sijie Chen, Ting Zhang, Ling Zheng, Jinghao Gao, Xiaowu Huang, Jun Gu, **Charlotte Vogt**, Weiran Zheng

Accepted Article, Journal of Physical Chemistry C, <https://doi.org/10.1021/acs.jpcc.5c02770>.

- Front cover feature.

## Submitted papers

The Role of Ocean-Based Electrochemical Carbon Dioxide Removal in Mass-Scale Sequestration

Or Mayraz, Noam Karo, **Charlotte Vogt**

Under revision.

Bio-Inspired Twisted FeN<sub>2</sub>+2C<sub>4</sub>+4 Catalytic Site Enhances the Electro-Oxidation of Energy Dense Hydrazine

Inbal Offen-Polak, S. Nagaprasad Reddy, Tomer Y. Burshtein, Syeda Mushrifa Zahan, Shuting Xiang, Yair Shahaf, Chen Studnik, Lingmei Ni, Mario U. Delgado-Jaime, Ulrike Kramm, Dario Dekel, **Charlotte Vogt**, Anatoly I. Frenkel, Ilya Grinberg, and David Eisenberg

Under review.

Decoupling Photochemical and Thermal Pathways in CO<sub>2</sub> Hydrogenation over Scalable One-Pot In<sub>2</sub>O<sub>3</sub>–CeO<sub>2</sub> Catalysts for Selective Methanol Production

Defu Yao, Xiaodan Lin, Letian Wang, Chenchen Zhang, Yuzhen Chen, Ziyi Zhong, **Charlotte Vogt**

Submitted.

Dynamic Response Spectroscopy: Towards A Model-Free Approach for Multi-Timescale

## Review papers

The concept of active sites in heterogeneous catalysis

**Charlotte Vogt**, and Bert M. Weckhuysen

Nature Chemistry Reviews, 2022, 6, 89-111.

<https://doi.org/10.1038/s41570-021-00340-y>

- Front cover feature.

Metal Support Interactions in Metal Oxide-Supported Atomic, Cluster, and Nanoparticle Catalysis

Denis Leybo, Ubong J. Etim, Matteo Monai, Simon R. Bare, Ziyi Zhong, **Charlotte Vogt**

Chemical Society Reviews, 2024, 53, 10450-10490.

<https://doi.org/10.1039/D4CS00527A>

- Front cover feature: <https://doi.org/10.1039/D4CS90081B>.

## 15.3 Books

### Monographs and textbooks

#### Edited Books

## 15.4 Book chapters

**Charlotte Vogt**, Caterina S. Wondergem, Bert M. Weckhuysen

UV-Vis Spectroscopy in Catalysis

Springer Handbook of Advanced Catalyst Characterization (Eds. Wachs, I.E., Bañares, M.),

Springer International Publishing, Cham, 2023, 237-264.

<https://doi.org/10.1007/978-3-031-07125-611>

*Bert M. Weckhuysen, Caterina S. Wondergem, **Charlotte Vogt**,*

*Time Resolved X-ray Spectroscopy in Catalysis*

*Springer Handbook of Advanced Catalyst Characterization (Eds. Wachs, I.E., Bañares, M.),*

*Springer International Publishing, Cham, 2023, 601-623.*

<https://doi.org/10.1007/978-3-031-07125-628>

## 15.5 Refereed papers in conference proceedings

## 15.6 Patents (granted)

**Charlotte Vogt**, Noam Zyser, Noam Karo, Or Mayraz, Assaf Licht

Submission number: 2023-050333  
Application number: PCT/IL2023/050256  
Title: Nanostructured electrodes  
Date of submission: 13-03-2022

**Charlotte Vogt**, Noam Zyser, Noam Karo, Or Mayraz, Assaf Licht  
Submission number: 2023-050334  
Application number: PCT/IL2023/050257  
Title: A combined method for carbon sequestration and water treatment by electrochemical deposition  
Date of submission: 18-07-2022

**Charlotte Vogt**, Mati Shani, Noam Karo, Or Mayraz, Assaf Licht  
Submission number: 2024-07422  
Title: Water treatment systems, methods, and uses thereof  
Date of submission: 06-08-2024

## 15.7 Research reports and other publications

## 16. CONFERENCES

### 16.1 Plenary, keynote or invited talks

#### International

1. **Charlotte Vogt**, Bert M. Weckhuysen , Structure sensitivity in CO<sub>2</sub> reduction over Ni-based catalysts, Joint Centre for Chemergy Research, Netherlands, 2018. (Invited Talk)
2. **Charlotte Vogt**, Virtual - How can we use CO<sub>2</sub> to make useful materials using catalysts?, Niels Stensen Conference for Sustainability, Netherlands, 2020. (Invited Talk)
3. **Charlotte Vogt**, Virtual - Operando spectroscopy in the clean energy transition, Award lecture as short-listed finalist at Organic Chemistry Reaxys PhD symposium, Canada, 2020. (Invited Talk)
4. **Charlotte Vogt**, Virtual - Quick-XAS to understand structure sensitivity in catalysis, Stanford Synchrotron radiation users meeting, USA, 2020. (Invited Talk)
5. **Charlotte Vogt**, Virtual - The big shift in catalysis, Material Pioneers, Netherlands, 2021. (Plenary)
6. **Charlotte Vogt**, Virtual - The era of small molecules, The World Information Congress, United Kingdom, 2021. (Plenary)
7. **Charlotte Vogt**, Virtual - Tuning catalyst activity, selectivity, and stability through fundamental understanding, NaWuReT, Germany, 2021. (Plenary)

8. **Charlotte Vogt**, A new generation of fundamental understanding in catalysis, Clara Immerwahr Award Talk, Germany, 2022. (Plenary)
9. **Charlotte Vogt**, On the activity of applied catalysts, Chemistry at the Interface of Biology and Medicine, Greece, 2022. (Invited Talk)
10. **Charlotte Vogt**, Virtual - Dynamic restructuring of supported metal nanoparticles and its implications for structure insensitive catalysis, Protochips Flashtalks Lecture Series, Netherlands, 2022. (Invited Talk)
11. **Charlotte Vogt**, Virtual - Dynamic restructuring of supported metal nanoparticles and its implications for structure insensitive catalysis, VSParticle Lecture Series, Netherlands, 2022. (Invited Talk)
12. **Charlotte Vogt**, Virtual - On the activity of applied catalysts, Nagoya University - International Science Exchange, Japan, 2022. (Invited Talk)
13. **Charlotte Vogt**, Keynote - Finding the Needle in a Haystack - Spectroscopy of Electrocatalytic Reactions in Aqueous Environment, EuChemS, Italy, 2023. (Invited Talk)
14. **Charlotte Vogt**, Modulated Excitation Operando FT-IR and Q-XAS of Electrocatalytic Reactions for the Energy Transition, IUPAC World Chemistry Congress, the Hague, the Netherlands, Netherlands, 2023. (Plenary)
15. **Charlotte Vogt**, Operando FT-IR spectroscopy and quick-XAS of electrocatalytic reactions for the energy transition, UniSysCat Symposium, Germany, 2023. (Invited Talk)
16. **Charlotte Vogt**, The Concept of Active Site in Catalysis, SUNCAT - Stanford Summer School on Catalysis, USA, 2023. (Plenary)
17. **Charlotte Vogt**, Understanding Aqueous Phase Electrocatalytic Reactions, New Frontiers in Organic Chemistry, Greece, 2023. (Invited Talk)
18. **Charlotte Vogt**, Virtual - Feasibility of strategies for carbon capture – a catalytic point of view , Israeli Ministry of Innovation, Science and Technology, Israel, 2023. (Invited Talk)
19. **Charlotte Vogt**, Virtual - Renewable energy-driven alternatives to thermocatalysis – challenges and opportunities in catalyst activity, SASOL - Catalysis and Chemistry for Sustainability Lecture Series, South Africa, 2023. (Invited Talk)
20. **Charlotte Vogt**, Correlating Transient Events at the Electrified Solid-Liquid Interface Relevant to Electrocatalysis, Max Planck Colloquium (Kohlenforschung and CEC), Germany, 2024. (Invited Talk)
21. **Charlotte Vogt**, Correlating Transient Events at the Electrified Solid-Liquid Interface Relevant to Electrocatalysis, SPP2080 DynaKat, Germany, 2024. (Plenary)
22. **Charlotte Vogt**, Correlating Transient Events at the Solid-Liquid Interface Relevant to Carbon Capture and Conversion - Active Sites and their Surroundings, Center for NanoScience (CeNS) and German excellence cluster e-conversion, Italy, 2024. (Plenary)

23. **Charlotte Vogt**, Correlating Transient Events at the Solid-Liquid Interface Relevant to Carbon Capture and Conversion - Active Sites and their Surroundings, Nature Conference: CO2 Conversion by Renewable Energy, China, 2024. (Plenary)
24. **Charlotte Vogt**, Finding the Needle in a Haystack - Operando Spectroscopy of Electrocatalytic Reactions in Aqueous Phase, MATSUS conference, Spain, 2024. (Invited Talk)
25. **Charlotte Vogt**, Homodyne Spectroscopy to Study Dynamic Interface Reactions, Max Plank Colloquium (Magdeburg), Germany, 2024. (Plenary)
26. **Charlotte Vogt**, Decoding Double layer Dynamics in CO2 Electroreduction over Cu, Umbrella Symposium: Advancing Energy Materials and Systems, Germany, 2025. (Plenary)
27. **Charlotte Vogt**, Seeing the Unseen: Unlocking the Hidden Forces of Catalysis, Nobel symposium on Chemistry for Sustainability: Fundamental Advances, May 19-22, 2025, Sweden, 2025. (Plenary)
28. **Charlotte Vogt**, Seeing the unseen: Unlocking the Hidden Forces of Catalysis for a Sustainable Future, Umbrella Symposium: Advancing Energy Materials and Systems, Germany, 2025. (Plenary)

## National

1. **Charlotte Vogt**, Structure sensitivity in catalysis, Israel Chemical Society Meeting, Israel, 2020. (Invited Talk)
2. **Charlotte Vogt**, A new generation of tools to investigate catalysts in action, NanoIL, Israel, 2021. (Invited Talk)
3. **Charlotte Vogt**, Fundamental understanding of heterogeneous catalysts under working conditions, Surface Science of Catalytic Surfaces, Israel, 2022. (Invited Talk)
4. **Charlotte Vogt**, Spectroscopy and microscopy of catalysts at work for energy-transition related processes, Israel Microscopy Society, Israel, 2022. (Invited Talk)
5. **Charlotte Vogt**, Modulated excitation operando spectroscopy of electrooxidation over Ni-based catalysts, Chemistry for a Sustainable Future Conference, Israel, 2023

## 16.2 Contributed Talks and Posters

### International Oral

1. **Charlotte Vogt**, Esther Groeneveld, Li Lu, Christopher J. Kiely, Gerda Kamsma, Peter H. Berben, Maarten Nachtegaal, Florian Meirer, Bert M. Weckhuysen, Unravelling structure sensitivity in CO2 hydrogenation over Ni, 18th Netherlands' Catalysis and Chemistry Conference, Netherlands. 03-2017 .

2. **Charlotte Vogt**, Esther Groeneveld, Li Lu, Christopher J. Kiely, Gerda Kamsma, Peter H. Berben, Maarten Nachtegaal, Florian Meirer, Bert M. Weckhuysen, Unravelling structure sensitivity in CO<sub>2</sub> hydrogenation over Ni, 25th North American Catalysis Society Meeting, USA. 06-2017 .
3. **Charlotte Vogt**, Jonas Palle, Esther Groeneveld, Florian Meirer, Bert M. Weckhuysen, The structure sensitivity of carbon-carbon coupling in CO<sub>2</sub> hydrogenation over Ni, 5th CHemistry as an INnovating Science (CHAINS) Conference, Netherlands. 12-2017 .
4. **Charlotte Vogt**, Jonas Palle, Esther Groeneveld, Florian Meirer, Bert M. Weckhuysen, Structure sensitivity in CO<sub>2</sub> hydrogenation over Ni, Materials, Characterization, Catalysts, Switzerland. 01-2018 .
5. **Charlotte Vogt**, Jonas Palle, Esther Groeneveld, Florian Meirer, Bert M. Weckhuysen, Unravelling structure sensitivity in CO<sub>2</sub> hydrogenation over Ni, Syngas Convention - Fuels and Chemicals from Synthesis Gas: State of the Art 3, South Africa. 03-2018 .
6. **Charlotte Vogt**, Esther Groeneveld, Li Lu, Christopher J. Kiely, Gerda Kamsma, Peter H. Berben, Maarten Nachtegaal, Florian Meirer, Bert M. Weckhuysen, Syngas Convention - Fuels and Chemicals from Synthesis Gas: State of the Art 3, 6th International Congress on Operando Spectroscopy, Spain. 04-2018 .
7. **Charlotte Vogt**, Esther Groeneveld, Raymond Unocic, Maarten Nachtegaal, Florian Meirer, Bert M. Weckhuysen, Reactant Induced, and Particle size dependent restructuring in catalytic nanoparticles, 8th Tokyo Conference on Advanced Catalytic Science and Technology, Japan. 08-2018 .
8. **Charlotte Vogt**, Ronny Neumann, Baran Eren, Bert M. Weckhuysen, The effect of nanostructuring in the electrocatalytic reduction of CO<sub>2</sub>, Electrochemical Conversion & Materials Conference, Netherlands. 06-2019 .
9. **Charlotte Vogt**, Matteo Monai, Bert M. Weckhuysen, Structure sensitivity in power-to-methane , 14th European Congress on Catalysis, Germany. 08-2019 .
10. **Charlotte Vogt**, Bert M. Weckhuysen, Structure sensitivity in catalysis, 7th CHemistry as an INnovating Science (CHAINS) Conference, Netherlands. 12-2019 .
11. **Charlotte Vogt**, Modulated excitation operando spectroscopy of electrooxidation over Ni-based catalysts, Operando VII, Switzerland. 05-2023 .
12. **Charlotte Vogt**, Tuning Catalyst Activity, Stability, and Selectivity through Fundamental Understanding, NAM 28, USA. 05-2023 .
13. Dani Sinausia, Homodyne Spectroscopy to Speciate Surface Reactions from Double Layer Dynamics in CO<sub>2</sub> Reduction over Cu, International Congress on Catalysis, France. 07-2024 .

## International Poster

1. Noam Zyser, **Charlotte Vogt\***, Strain as an activity descriptor in the electrooxidation of urea over nickel, Operando VII, Switzerland. 05-2023 .
2. Dani Sinausia, **Charlotte Vogt\***, Unravelling CO<sub>2</sub> Electroreduction by Supervised Regression-Assisted Operando Spectroscopy,, Autumn School – Accelerating hydrogen: Production, storage, and conversion technologies for a sustainable tomorrow, Paris, France. 10-2023 .
3. Tal Rosner, **Charlotte Vogt\***, probing the Mechanism of Haber-Bosch Catalysis under Working Conditions,, 2nd international workshop on laboratory-based X-ray spectroscopies for chemical speciation, Berlin, Germany. 10-2023 .
4. Rutvija Dange, **Charlotte Vogt\***, Towards Operando Spectroscopic Investigation of Plasma-Catalyst Synergy in NH<sub>3</sub> Synthesis, 2nd international workshop on laboratory-based X-ray spectroscopies for chemical speciation, Berlin, Germany. 10-2023 .

## National Oral

1. Noam Zyser, **Charlotte Vogt\***, Activity descriptors in the electrooxidation of urea over nickel, TCESC, Israel. 06-2023 .

## National Poster

1. Dani Sinausia, Homodyne Spectroscopy to Speciate Surface Reactions from Double Layer Dynamics in CO<sub>2</sub> Reduction over Cu, Israel Chemical Society meeting, Israel. 04-2024 .
2. Elias Haddad, Investigating Biomimetic Polyoxometalate Electrocatalysts in Redox Reactions Through In-Situ Spectroscopy, Israel Chemical Society meeting, Israel. 04-2024 .
3. Rutvija Dange, Towards Operando Spectroscopic Investigation of Plasma-Catalyst Synergy in NH<sub>3</sub> Synthesis, Israel Chemical Society meeting, Israel. 04-2024 .
4. Deepraj Verma, Operando Spectroscopic Characterization of Electrocatalytic Nitrogen Reduction over Fe, Israel Chemical Society meeting, Israel. 04-2024 .
5. Tal Rosner, Probing the Mechanism of Haber-Bosch Catalysis under Working Conditions, Israel Chemical Society meeting, Israel. 04-2024 .

## 16.3 Participation in organizing conferences

## 17. NOTES