

Dr. Yannick Schulte

Contact Information

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Professional Experience

11/2024 – ongoing	Postdoctoral Researcher <i>Institute of Science Tokyo, Japan</i>
12/2023 – 09/2024	Postdoctoral Researcher <i>University of Duisburg-Essen, Germany</i>

Education

01/2019 – 12/2023	Ph.D. in Inorganic Chemistry (“ <i>summa cum laude</i> ”) <i>University of Duisburg-Essen, Germany</i>
10/2016 – 09/2018	M.Sc. in Chemistry (final grade: 1.0) <i>University of Duisburg-Essen, Germany</i>
10/2013 – 09/2016	B.Sc. in Chemistry (final grade: 1.3) <i>University of Duisburg-Essen, Germany</i>

Fellowships

11/2024 – ongoing	Postdoctoral Fellowship for Research in Japan <i>Japan Society for the Promotion of Science</i>
01/2019 – 12/2021	Doctoral Fellowship <i>Evonik Industries</i>
10/2017 – 09/2018	“Deutschlandstipendium” (public-private scholarship) <i>Prof. Dr. Dr. h. c. Reinhard Zellner</i>

Awards

2019	Graduate Award of the University of Duisburg-Essen <i>Best Graduate in Chemistry (M.Sc.)</i>
2017	Graduate Award of the University of Duisburg-Essen <i>Best Graduate in Chemistry (B.Sc.)</i>

Research Experience

11/2024 – ongoing	Postdoctoral Researcher
Advisor	Prof. Dr. Kei Goto
Project	<i>Bottleable "Ph₃C": Negligible Electronic Perturbation by Peripheral Steric Protection</i> Using peripheral steric protection for the stabilization of "unsubstituted", i.e., electronically nearly unaltered, Ph ₃ C-without the need for matrix isolation Characterizing by NMR, EPR, and UV-vis spectroscopy, sc-XRD, cyclic voltammetry, and quantum mechanical computations Conducting reactivity studies
12/2023 – 09/2024	Postdoctoral Researcher
Advisor	Prof. Dr. Stephan Schulz
Project	<i>Stabilization of a Triplet Bismuthinidene by a Novel, Bulky Septiphenyl Ligand</i> Designed a novel, bulky aryl ligand Ar*, optimization of synthesis Used Ar* for the stabilization of a triplet bismuthinidene Characterized by NMR, IR, and UV-vis spectroscopy, sc-XRD, and quantum mechanical computations Conducted reactivity studies, resulting in stable bismuth hydrides and deuterides
01/2019 – 12/2023	Doctoral Studies
Advisor	Prof. Dr. Stephan Schulz
Project	<i>Pentaarylcyclopentadienyl Compounds: Anions, Radicals, and Cations</i> Isolated a series of stable cyclopentadienyl radicals and a stable cyclopentadienyl cation Characterized by EPR and ENDOR spectroscopy, sc-XRD, and SQUID magnetometry with special emphasis on potential antiaromaticity and Jahn-Teller distortion Conducted reactivity studies
10/2018 – 12/2018	Research Project
Advisor	Prof. Dr. Stephan Schulz
Project	<i>Pentaarylcyclopentadienyl Pnictogen Dihalides as Synthetic Equivalents of Pnictogen Dihalides</i> Isolated and characterized cyclopentadienyl substituted Pnictogen Dichlorides (4- <i>t</i> -BuPh) ₅ CpPnCl ₂ Pn = P, As, Sb, Bi
04/2018 – 09/2018	M.Sc. Thesis
Advisor	Prof. Dr. Stephan Schulz
Project	<i>Pentaarylcyclopentadienyl Alkali Metal Salts, Alkaline Earth Metallocenes, and Tetrel Metallocenes</i> Isolated and characterized cyclopentadienyl substituted alkali metal, alkaline earth metal, and tetrel (half) metallocenes
08/2017 – 09/2017	Research Project
Advisor	Dr. Thorsten Schaller
Project	<i>NMR Spectroscopic Identification and Quantification of Fluorinated Surfactants Used in Fire-fighting Foams</i>

	Established advanced methods of two-dimensional ^{19}F NMR spectroscopy at the local spectrometers and their application for the identification and quantification of fluorinated surfactants
03/2017 – 03/2017	Research Project
Advisor	Prof. Dr. Stephan Schulz
Project	<i>Reduction of tin and lead halides with low-valent gallium compounds</i> Reactivity studies of tin and lead halides and their complexes with phosphine ligands and a β -diketiminato gallium(I) reagent
07/2016 – 09/2016	B.Sc. Thesis
Advisor	Prof. Dr. Stephan Schulz
Project	<i>Isolation, Characterization and Polymerization Studies of Hetero- and Homobimetallic Complexes of Zinc and Aluminum with N,O,N-chelating Ligands for the Ring Opening Polymerization of Lactide</i> Isolated and characterized a series of zinc and aluminum complexes with different ligands and activating groups Compared the performance of these complexes in the ring-opening polymerization of lactide

Teaching Experience

01/2019 – 09/2024	Teaching Assistant
	University of Duisburg-Essen, Germany
Course	<i>Advanced Synthetic Inorganic Chemistry Laboratory Course</i> Supervised, guided, and mentored master-level students Participated in course design
10/2016 – 12/2016	Teaching Assistant
	University of Duisburg-Essen, Germany
Course	<i>Introductory Inorganic Chemistry Laboratory Course</i> Supervised laboratory experiments
02/2015 – 03/2015	Teaching Assistant
	University of Duisburg-Essen, Germany
Course	<i>Introductory Inorganic Chemistry Laboratory Course</i> Supervised laboratory experiments

Skills and Techniques

Synthetic Methods	Organic and inorganic synthesis, column chromatography, Schlenk and glovebox techniques, super acid chemistry
Analytical Methods	Spectroscopy (NMR, IR, UV-Vis, EPR), sc-XRD, CV, SEM, EDX, MS
Computational Chemistry	DFT calculations (Orca)
Software	MS Office, ChemDraw, Origin, TopSpin, ShelX, Mercury, SciFinder, ConQuest
Languages	German, native speaker English, business fluent French, basic knowledge

Publications

10. Bottleable "Ph₃C": Negligible Electronic Perturbation by Peripheral Steric Protection
Y. Schulte, H. Kotowa, S. Kuwano, K. Goto **2025**, *preprint on ChemRxiv*,
<https://doi.org/10.26434/chemrxiv-2025-hdm6f>.
9. Synthesis and Reactivity of a Mono-Coordinated Triplet Bismuthinidene
Y. Schulte, T. Freese, C. Wölper, J. Schulte, G. Haberhauer, S. Schulz, *Angew. Chem. Int. Ed.* **2025**,
64, e202508250.
8. Structural Characterization and Reactivity of a Room Temperature-Stable, Antiaromatic
Cyclopentadienyl Cation Salt
Y. Schulte, C. Wölper, S. M. Rupf, M. Malischewski, Daniel J. SantaLucia, Frank Neese, G.
Haberhauer, S. Schulz, *Nature Chemistry*. **2024**, *16*, 651.
7. Metal-coordinated Distibene and Dibismuthene Dications – Isoelectronic Analogues of Butadiene
H. M. Weinert, **Y. Schulte**, A. Gehlhaar, C. Wölper, G. Haberhauer, S. Schulz, *Chem. Commun.* **2023**,
59, 7755.
6. Comparing London Dispersion Pnictogen- π interactions in Naphthyl-substituted Dipnictanes
A. Gehlhaar, E. Schiavo, C. Wölper, **Y. Schulte**, A. A. Auer, S. Schulz, *Dalton Trans.* **2022**, *51*, 5016.
5. Cooperative Effect in Binuclear Zinc Catalysts in the ROP of Lactide
S. Ghosh, **Y. Schulte**, C. Wölper, A. Tjaberings, A. H. Gröschel, G. Haberhauer, S. Schulz,
Organometallics **2022**, *41*, 2698.
4. Observation of Discrete Valence Tautomers in Crystalline Cyclopentadienyl Radicals
Y. Schulte, B. L. Geoghegan, C. Helling, C. Wölper, G. Haberhauer, G. E. Cutsail, S. Schulz, *J. Am.*
Chem. Soc. **2021**, *143*, 12658.
3. Direct Synthesis of Pentaarylcyclopentadienyl Sandwich and Half-Sandwich Complexes of s-, p-,
and d-Block Metals
Y. Schulte, H. Weinert, C. Wölper, S. Schulz, *Organometallics* **2020**, *39*, 206.
2. Synthesis of a Ga-Stabilized As-Centered Radical and a Gallastibene by Tailoring Group 15
Element-Carbon Bond Strengths
C. Helling, C. Wölper, **Y. Schulte**, G. E. Cutsail, S. Schulz, *Inorg. Chem.* **2019**, *58*, 10323.
1. Synthesis and Structures of s- and p-Block Metal Complexes Containing Sterically Demanding
Pentaarylcyclopentadienyl Substituents
Y. Schulte, C. Stienen, C. Wölper, S. Schulz, *Organometallics* **2019**, *38*, 2381.

Conference Contributions

5. Isolable Triarylmethyl Radicals Stabilized by Peripheral Steric Protection (Poster)
Y. Schulte, K. Hoshino, S. Kuwano, K. Goto, *The 35th Symposium on Physical Organic Chemistry*,
2025, Nagoya, Japan.
4. Stable Cyclopentadienyl Cations, Radicals, and Anions (Poster)
Y. Schulte, S. Schulz, *21st Conference on Inorganic Chemistry*, **2022**, Marburg, Germany.
3. Observation of Distinct Valence Tautomers in Crystalline Cyclopentadienyl Radicals (Talk)
Y. Schulte, S. Schulz, *GDCh-Wissenschaftsforum Chemie* **2021**, online.
2. Isolation of Stable and Crystalline Cyclopentadienyl Radicals (Poster)
Y. Schulte, S. Schulz, *GDCh-Wissenschaftsforum Chemie* **2021**, online.
1. Direct Preparation of Bulky Main Group Metallocenes from Elemental Metals and
Cyclopentadienyl Radicals (Poster)
Y. Schulte, S. Schulz, *GDCh-Wissenschaftsforum Chemie* **2019**, Aachen, Germany.