

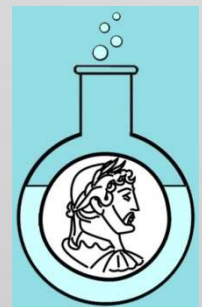
Vorstellung der Preisträger und Preisträgerinnen des Römer-Preises 2020

Mit herzlichem Dank an die Römer-Stiftung
für die großzügige Förderung
der Departments Biochemie und Chemie.



Mit Preisen in Höhe von 500 € wurden für
exzellente Leistungen während ihrer
Master-Arbeiten ausgezeichnet:

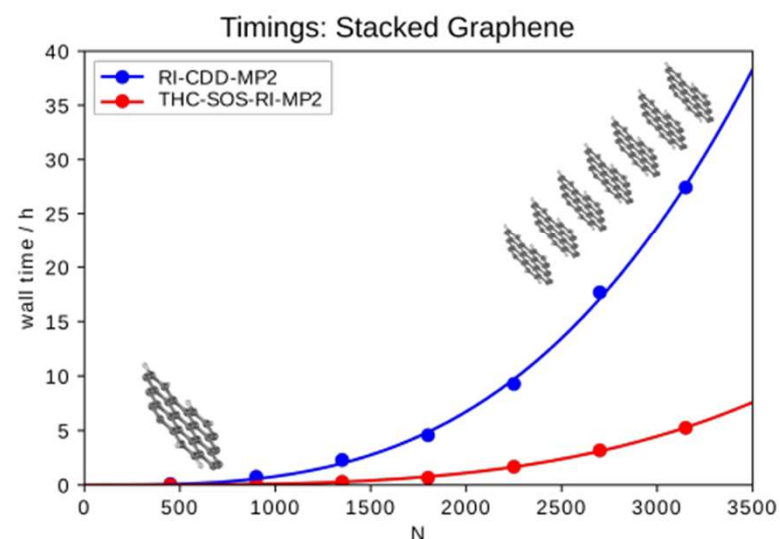
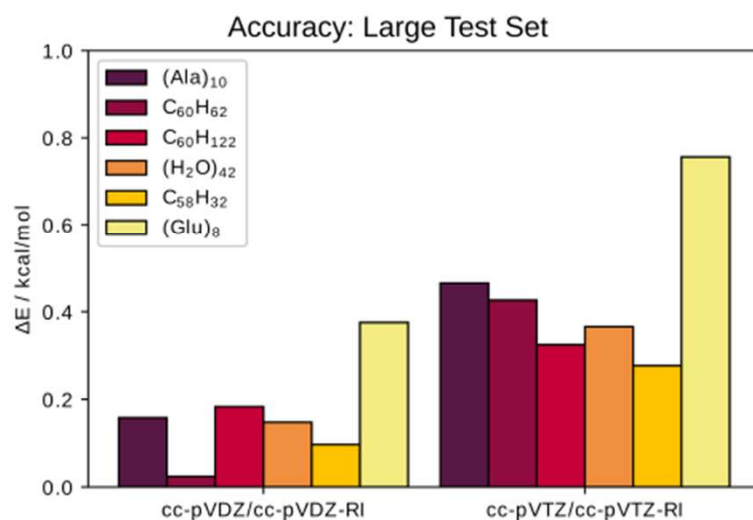
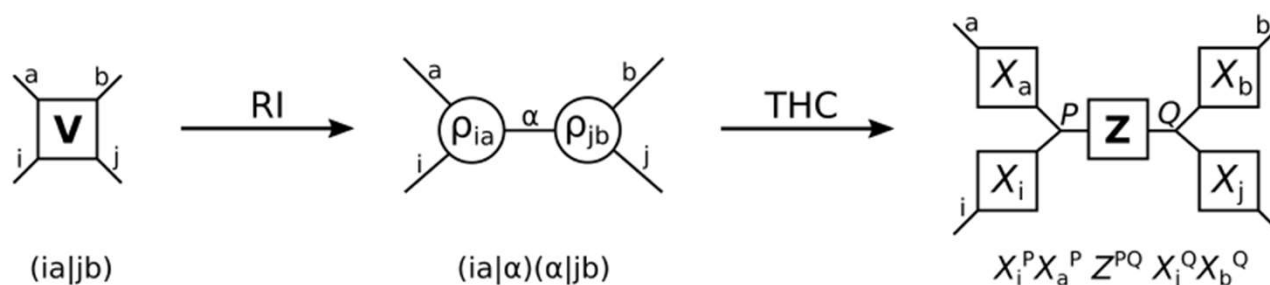
Felix Bangerter
Viktoria Drontschenko
Sophie Gutenthaler
Tobias Lenz
Martina Pfeiffer
David Schmidl
Lukas Zeisel



Tensor Hypercontracted Second Order Møller-Plesset Perturbation Theory

Felix H. Bangerter

AK Prof. Ochsenfeld



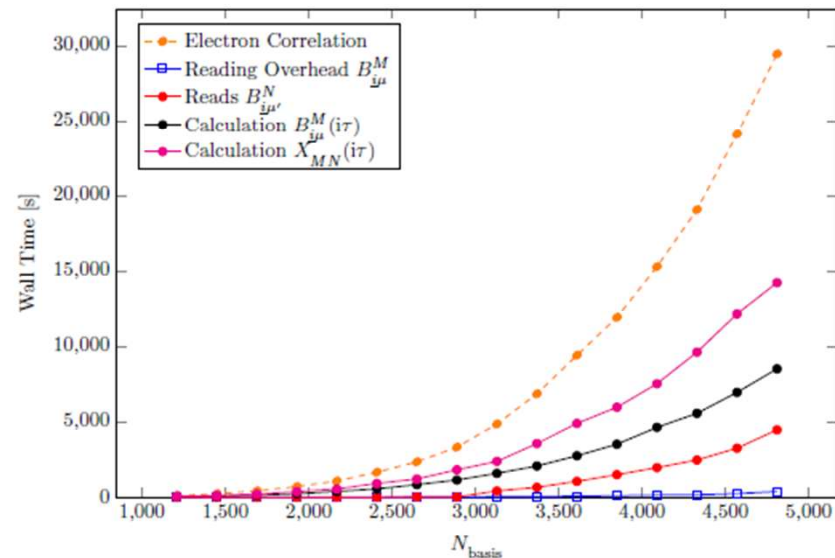
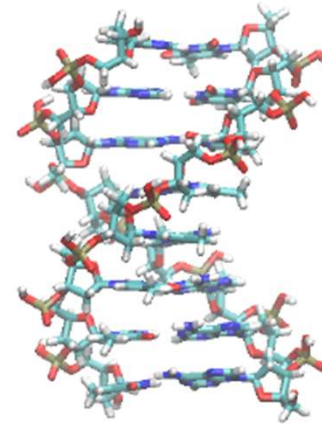
Efficiency Improvements for the Random Phase Approximation

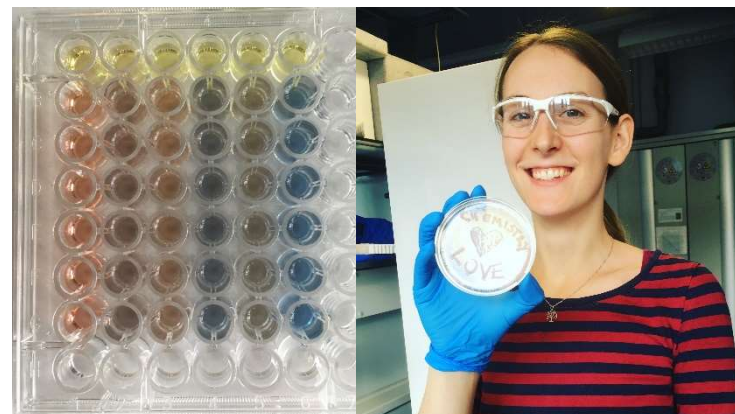
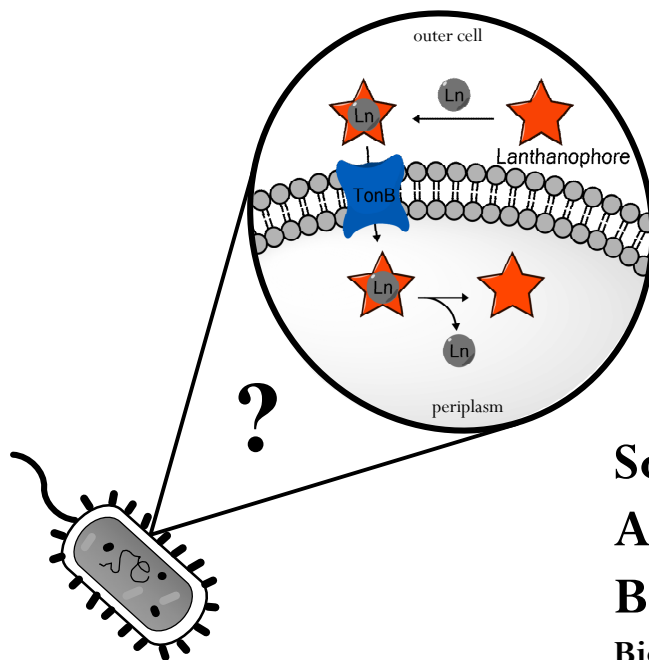
Viktoria Drontschenko
AK Prof. Ochsenfeld



- Memory Efficient Calculation of the Correlation Energy
- Minimal Overhead Batching
- **Large-Scale Calculations on a Single Node**

$$X_{0,MN}(i\tau) = B_{j\mu}^M(i\tau) B_{\mu j}^N$$
$$B_{\mu j}^N = B_{\mu\nu}^N L_{\nu j}$$



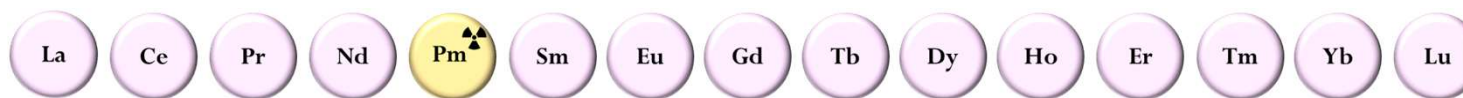


Sophie Gutenthaler

AK Daumann

Bioinorganic Chemistry

Bioinspired Chelators for Lanthanide Recycling



Römer Preis 2020 – Tobias Lenz

- Arbeitsgruppe: AK Klapötke
- Arbeitsgebiet: Energetische Materialien
Untersuchung von mechanischen Empfindlichkeiten

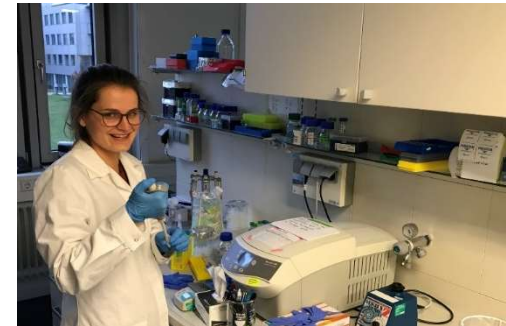


M.Sc. Martina Pfeiffer

PhD student Tinnefeld group | Physical Chemistry

Ludwig Maximilians-Universität München | Center for NanoScience (CeNS)

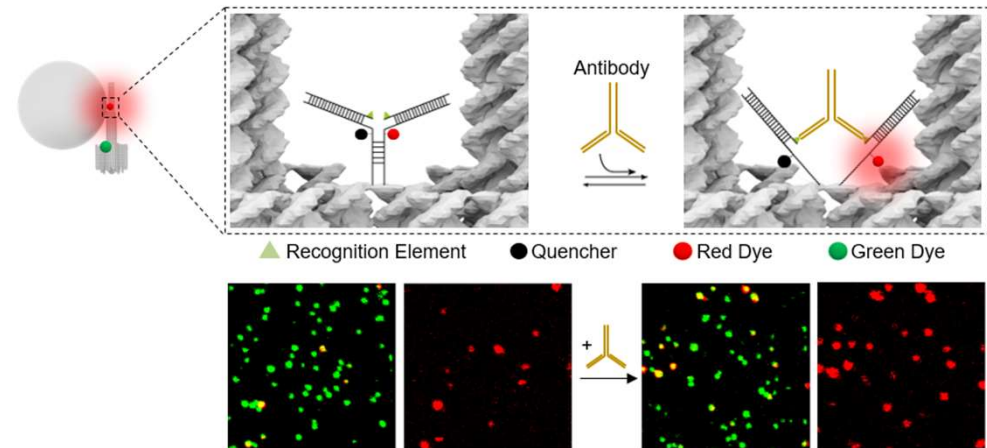
Research Theme: DNA Origami-Based Optical Single-Molecule Biosensors



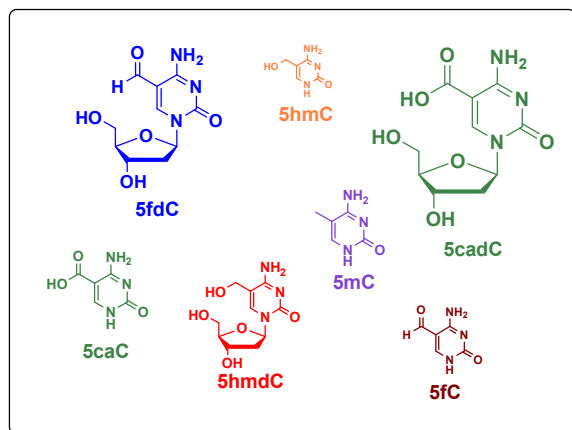
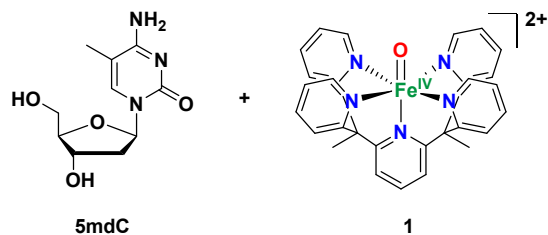
Research Description:

The uncontrollable nature of pandemics such as the current outbreak of SARS-CoV-2 virus illustrates the need for cost-efficient and robust diagnostic technologies that provide reliable and fast diagnostic results on the road.

My research focusses on developing DNA origami platforms for the detection of clinical relevant biomarkers which will help to address this challenge in the future.



DNA origami nanoantennas with cleared hotspot for single-molecule detection of antibodies.

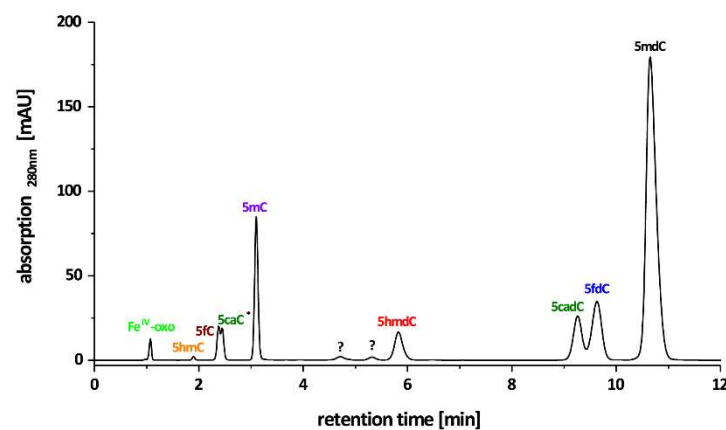


David Schmidl

AK Daumann
Bioinorganic Chemistry



“Reactivity of a Functional TET Enzyme Model Against Nucleosides”



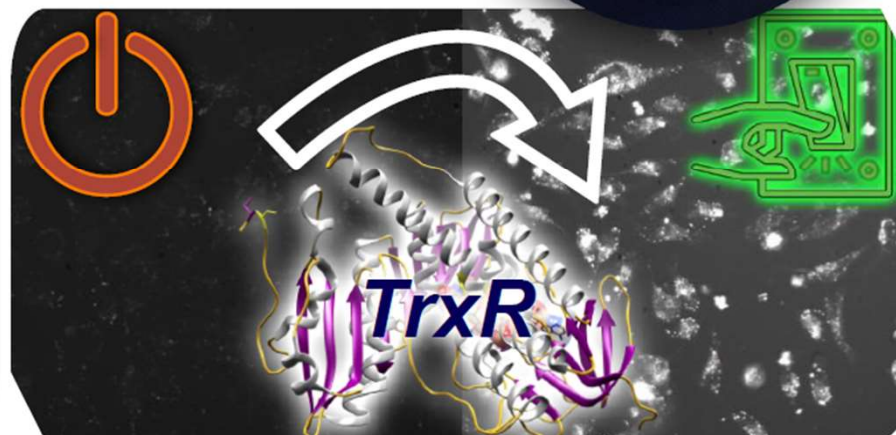
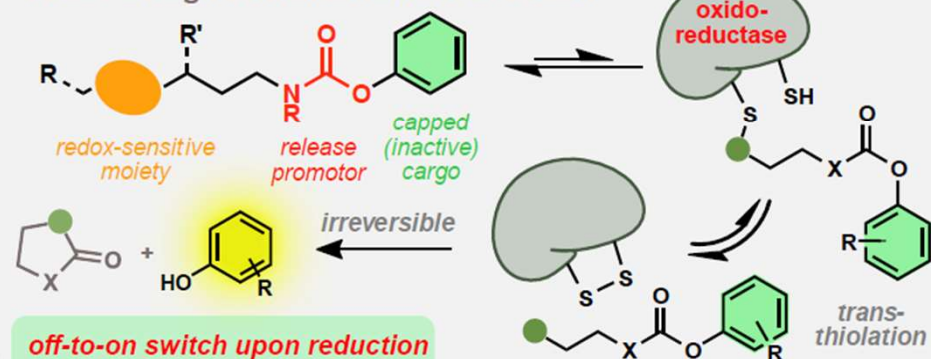


REDOX-RESPONSIVE AND TARGETABLE CHEMICAL PROBES AND PRODRUGS FOR BIOMEDICAL APPLICATIONS

“Development of bioinspired, thioredoxin reductase-selective chemical probes”



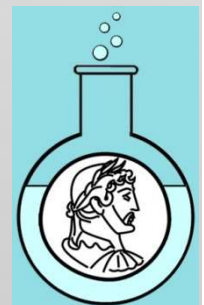
Probe design and mechanism of action



Promotions-Preise in Höhe von 1.000 €
wurden für herausragende Leistungen verliehen an:

Michael Ameismeyer
Daniel Böhm
Dr. Lucie Grokenberger
Dr. Lukas Kater
Dr. Robert J. Mayer
Sebastian Michalski
Dr. Laurens Peters

Dr. Benjamin Pölloth
Dr. Marco Reichel
Kuno Schwärzer
Dr. Max Siebert
Dr. Franziska Traube
Dr. Sebastian Vogel

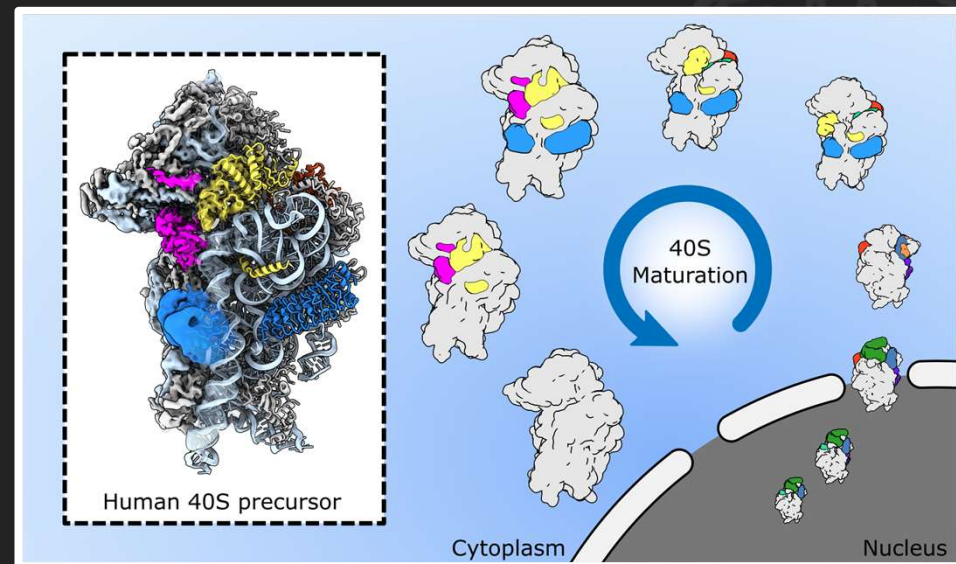


Michael Ameismeier AG Beckmann



Strukturbiologie

Cryo-EM Analysis of Human Small Ribosomal Subunit Biogenesis



Metal oxide nanomorphologies for electrocatalysis and battery materials

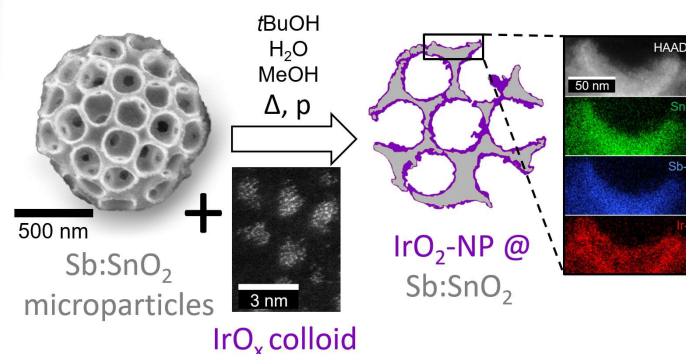
Research topics include

- Porous doped SnO_2 nanomorphologies
- IrO_x nanoparticle synthesis for oxygen evolution reaction catalysis
- Ni-oxide based nanoparticles and –structures for catalysis
- Nanosized LiFeMn-phosphate cathode material, SnO_x -based and ceramic anodes

Synthesis of porous oxide microparticles by spray drying in labs of Prof. T. Bein



Doped SnO_2 microparticles + IrO_2 nanoparticles



Further details: *Adv. Funct. Mater.* **2019**, 1906670

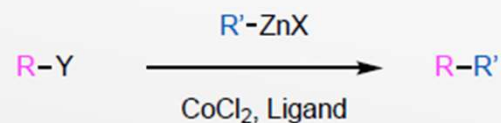


Special Thanks to supervisors:

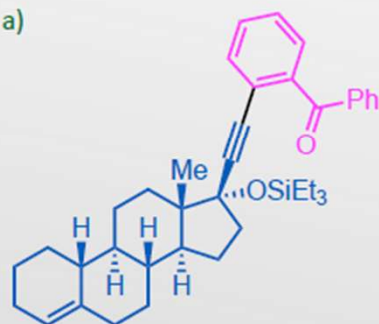
Prof. Thomas Bein
LMU – Phys. Chem.

Prof. Dina Fattakhova-Rohlfing
Forschungszentrum Jülich (FZJ) –
IEK-1: Electrochemical storage &
University Duisburg Essen (UDE)

COBALTKATALYSIERTE KREUZKUPPLUNGEN VON ORGANOZINKVERBINDUNGEN

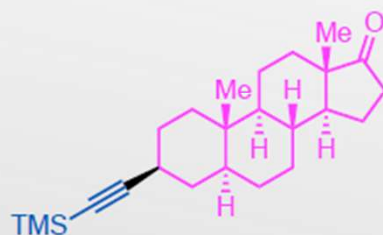


a)



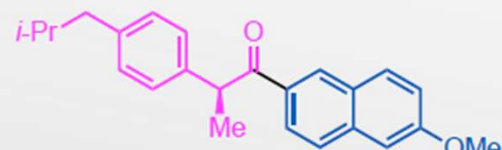
75%

b)



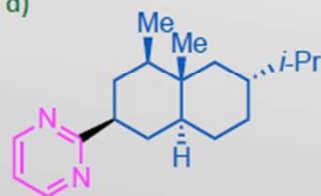
84%, dr = 92:8

c)



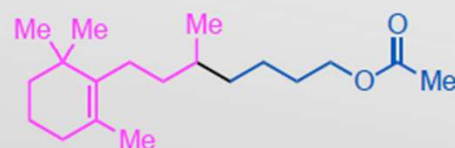
89%, 97% ee

d)

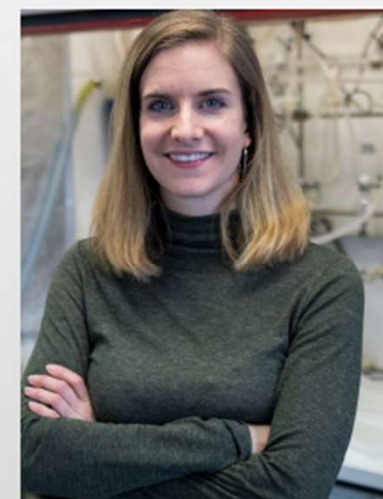


52%, dr = 98:2

e)



72%

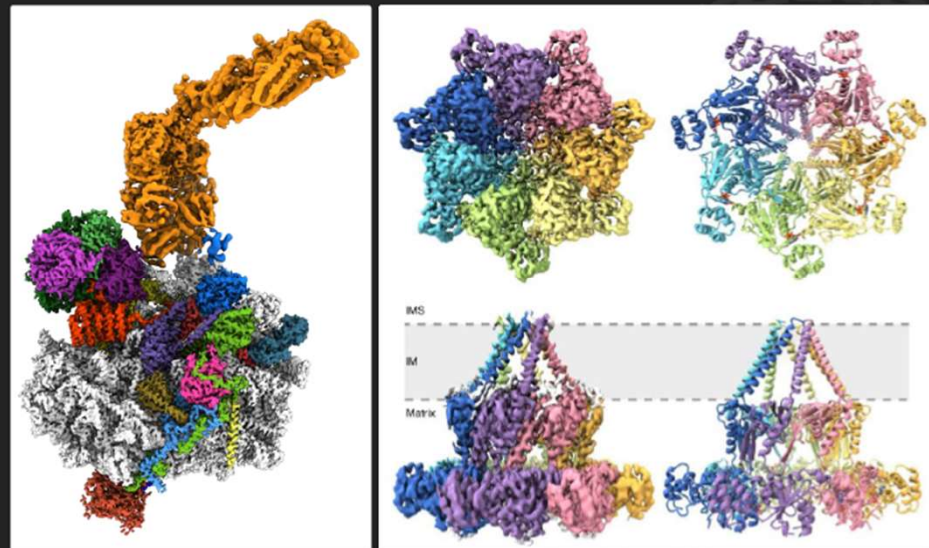


Dr. Lukas Kater AG Beckmann



Strukturbiologie

Structural Studies of Eukaryotic Ribosome Biogenesis and the Sec and Bcs1 Protein Translocation Systems



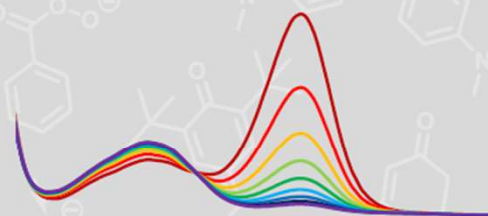
Making Organic Chemistry More Predictable!



Dr. Robert J. Mayer
Physical Organic Chemistry
AK Ofial/Mayr

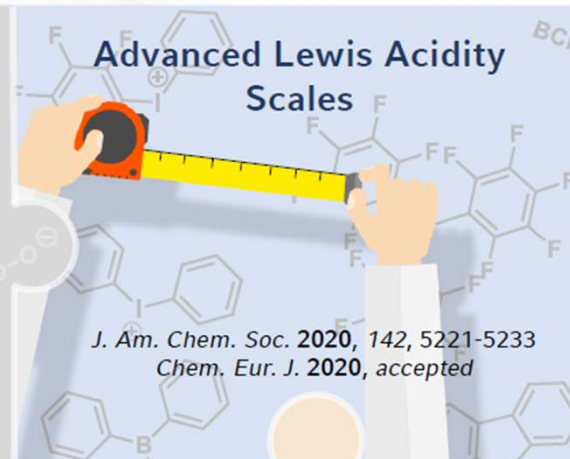


Quantifying Polar Reactivity



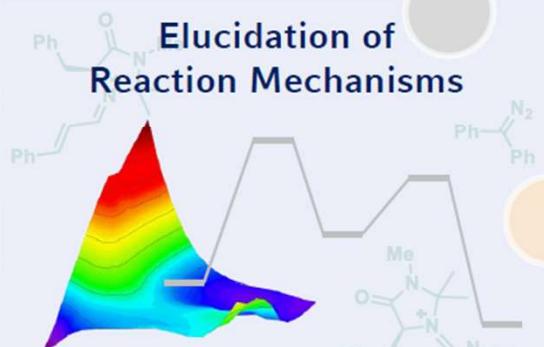
Org. Lett. **2020**, *22*, 2182-2186
J. Org. Chem. **2019**, *84*, 8837-8858
Org. Lett. **2018**, *20*, 2816-2820
Angew. Chem. Int. Ed. **2017**, *56*, 13279-13282

Advanced Lewis Acidity Scales



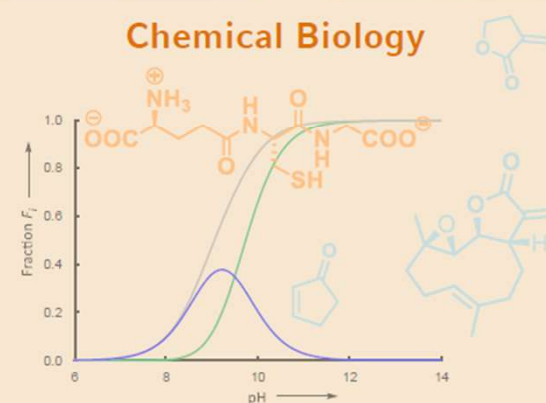
J. Am. Chem. Soc. **2020**, *142*, 5221-5233
Chem. Eur. J. **2020**, accepted

Elucidation of Reaction Mechanisms



J. Am. Chem. Soc. **2020**, *142*, 8383-8402
Angew. Chem. Int. Ed. **2020**, *59*, 12527-12533
Chem. Eur. J. **2018**, *24*, 5901-5910

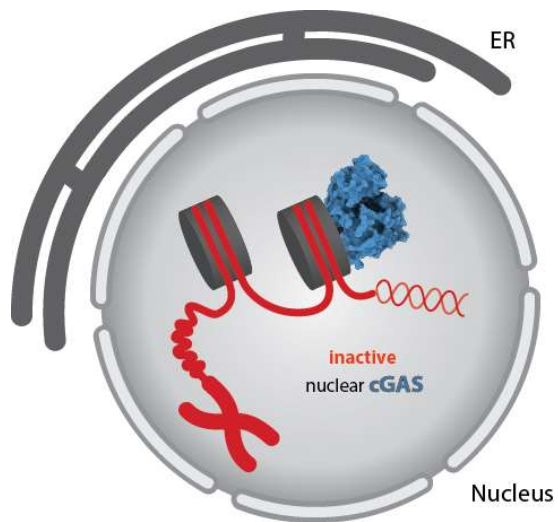
Chemical Biology



Angew. Chem. Int. Ed. **2019**, *58*, 17704-17708



Gene Center
Munich



Sebastian Michalski

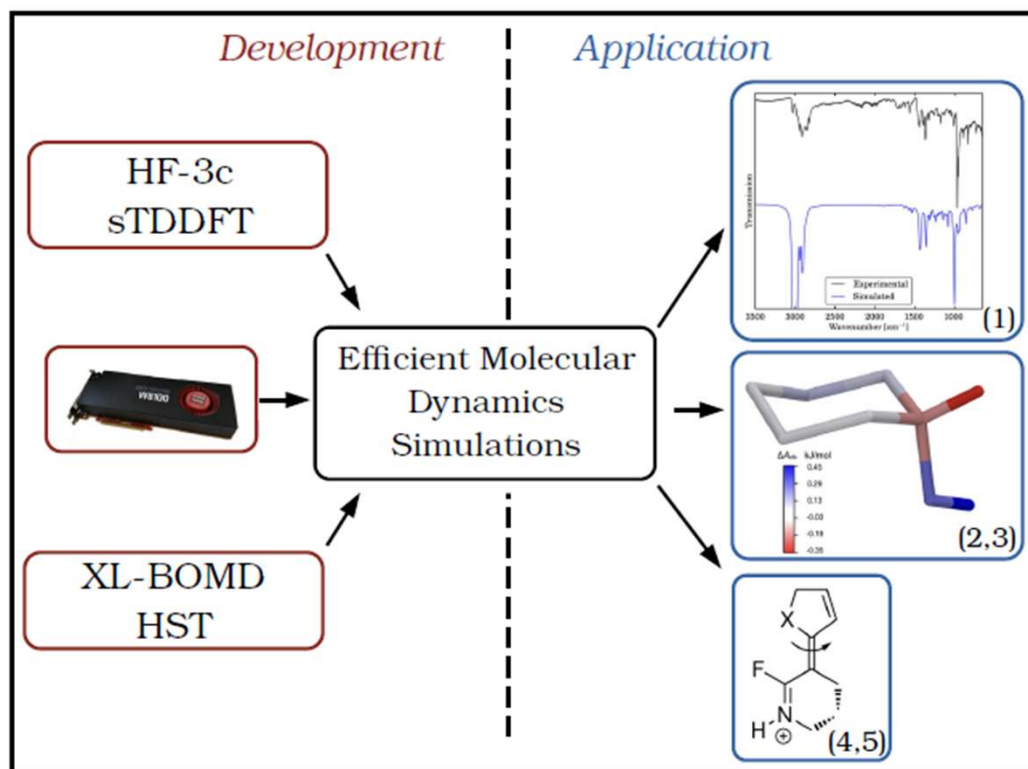
AG Hopfner

Innate Immunity

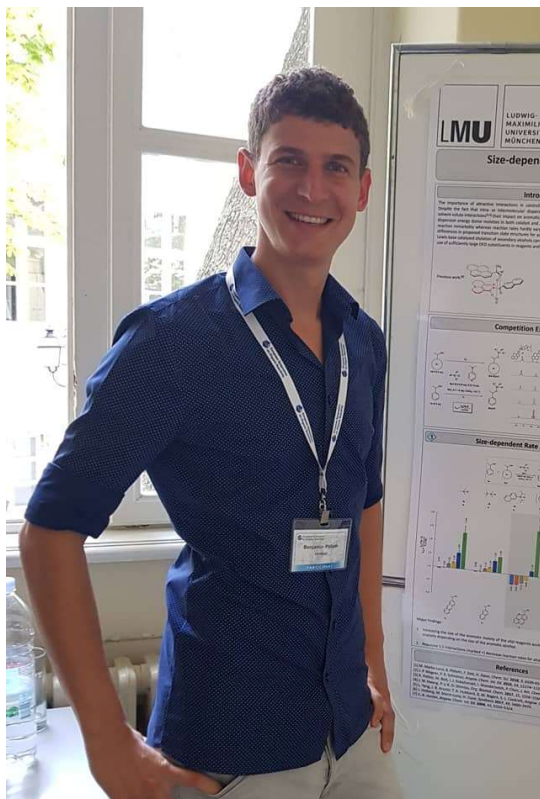


Development and Application of Efficient Ab Initio Molecular Dynamics Simulations of Ground and Excited States

Laurens Peters
AK Ochsenfeld



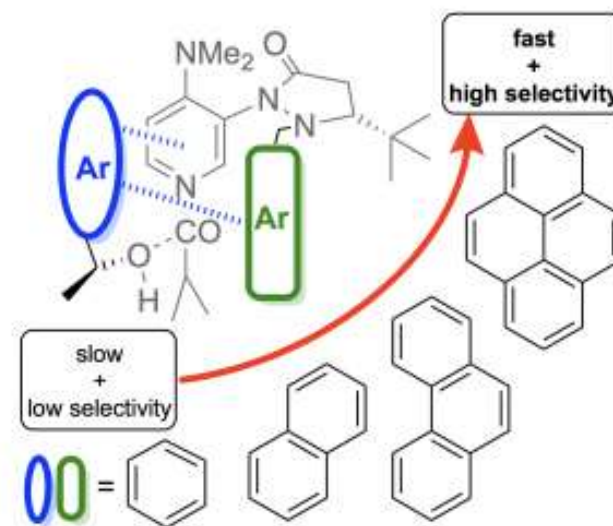
- (1) **L. D. M. Peters**, J. Kussmann, C. Ochsenfeld, *J. Chem. Theory Comput.*, **13**, 5479 (2017);
 (2) J. C. B. Dietschreit, **L. D. M. Peters**, J. Kussmann, C. Ochsenfeld, *J. Phys. Chem. A*, **123**, 2163 (2019);
 (3) **L. D. M. Peters**, J. C. B. Dietschreit, J. Kussmann, C. Ochsenfeld, *J. Chem. Phys.*, **150**, 194111 (2019);
 (4) **L. D. M. Peters**, J. Kussmann, C. Ochsenfeld, *J. Chem. Theory Comput.*, **15**, 6647 (2019);
 (5) **L. D. M. Peters**, J. Kussmann, C. Ochsenfeld, *J. Phys. Chem. Lett.*, **11**, 3955 (2020).



Dr. Benjamin Pölloth, AK Zipse

Experimentelle und theoretische Untersuchungen zu größenbedingten Reaktionsbeschleunigungen in der Organokatalyse.

Und empirische Studien zu einer Online-Video Bibliothek für das OC-Grundpraktikum.



Publikationen:

Pölloth, Sibi, Zipse *Angew. Chem. Int. Ed.* **2020**, 59, <https://doi.org/10.1002/anie.202011687>.

Pölloth, Schwarzer, Zipse *J. Chem. Educ.* **2020**, 97, 328 - 337.

Pölloth, Teikmane, Schwarzer, Zipse *J. Chem. Educ.* **2020**, 97, 338 - 343.

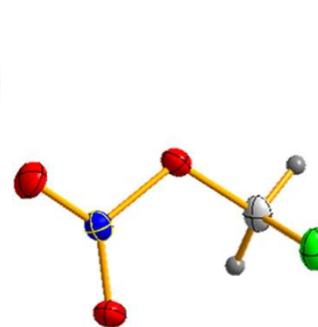
Marin-Luna, Pölloth, Zott, Zipse *Chem. Sci.* **2018**, 9, 6509 – 6515.

Dr. Marco Reichel

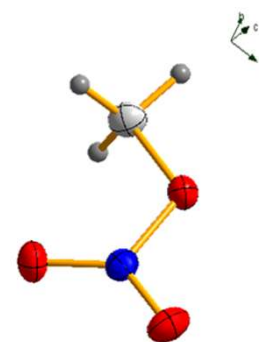
Synthesis and Investigation of New Fluoromethylating Agents and Their Impact on Forming Energetic Materials



Fluoromethyl Nitrate vs Methyl Nitrate:



FS 108 N
IS < 0.2 Nm

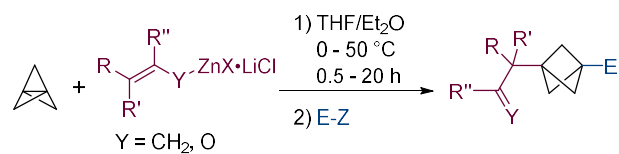


FS 350 N
IS 0.2 Nm

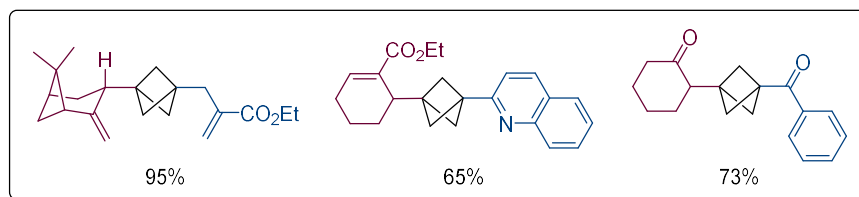
H/F substitution sensitizes energetic compounds



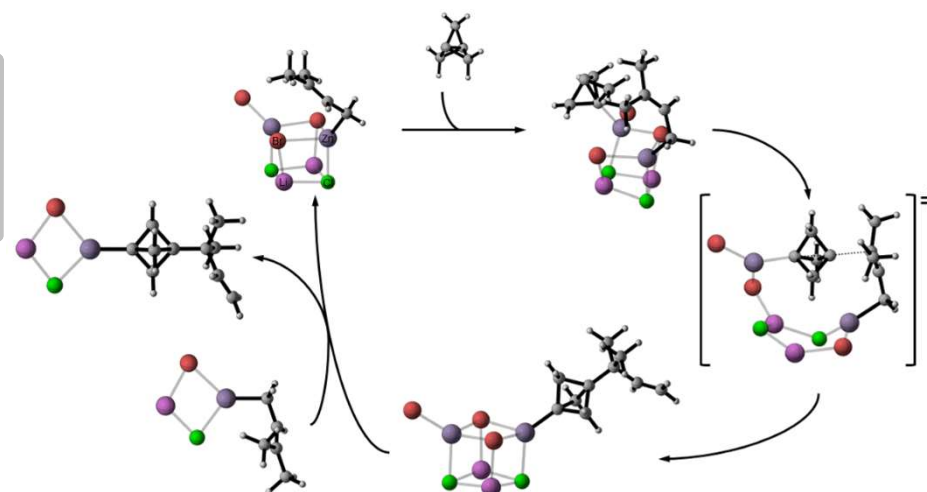
Addition von Organozinkverbindungen an [1.1.1]Propellan



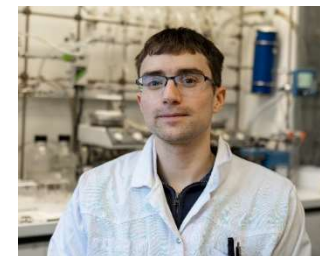
E-Z = Arylhalogenide, Carbonsäurechloride, Sulfonylthioate, Hydroxylaminobenzoate, Allylhalogenide, Tosylcyanid



Kristallstruktur des
Bioisosters BCP-
Pethidin



Berechneter Reaktionsmechanismus (B3LYP-
D3/def2SVP)



Kuno Schwärzer, Arbeitskreis Prof. Dr. Paul Knochel

Dr. Max Siebert

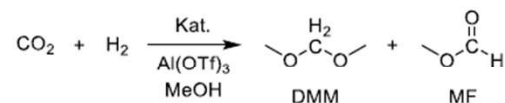
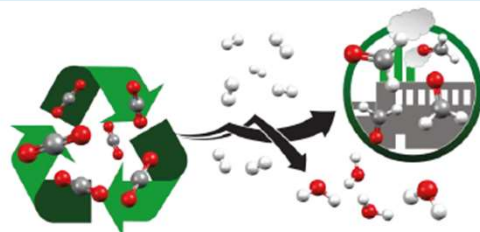
Arbeitsgruppe Prof. Dr. Oliver Trapp

Forschungsarbeit in der organischen Chemie:

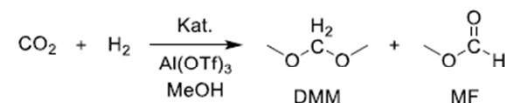
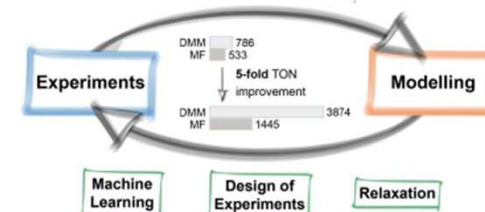
Optimierung der selektiven Ruthenium-katalysierten Kohlenstoffdioxid-Reduktion zu Dimethoxymethan sowie mechanistische Untersuchung der Acetat-initiierten katalytischen Trimerisierung von aliphatischen Isocyanaten



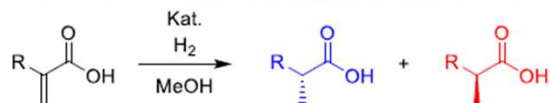
I



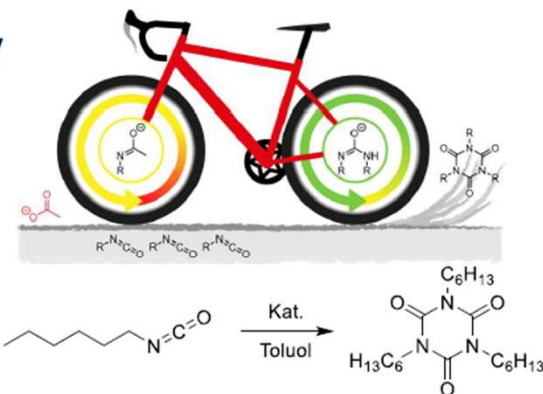
II



III



IV

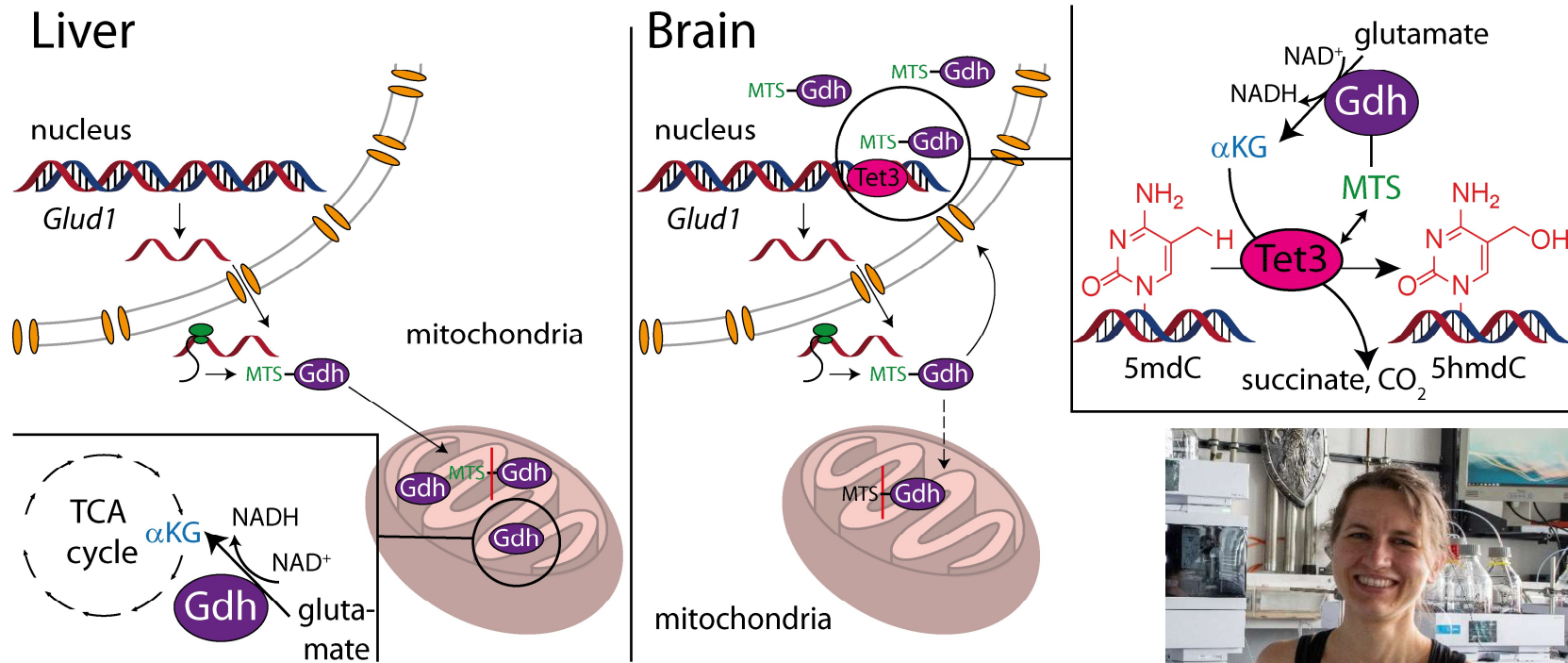


- I: [M. Siebert](#), M. Seibicke, A. F. Siegle, S. Kräb, O. Trapp, *J. Am. Chem. Soc.* **2019**, *141*, 334-341.
M. Seibicke, [M. Siebert](#), A. F. Siegle, S. M. Gutenthaler, O. Trapp, *Organometallics* **2019**, *38*, 1809-1814.
II: [M. Siebert](#), G. Krennrich, M. Seibicke, A. F. Siegle, O. Trapp, *Chem. Sci.* **2019**, *10*, 10466-10474.
III: [M. Siebert](#), G. Storch, O. Trapp, *Org. Process Res. Dev.* **2020**, *24*, 1304-1309.
IV: [M. Siebert](#), R. Sure, P. Deglmann, A. C. Closs, F. Lucas, O. Trapp, *J. Org. Chem.* **2020**, *85*, 8553-8562.



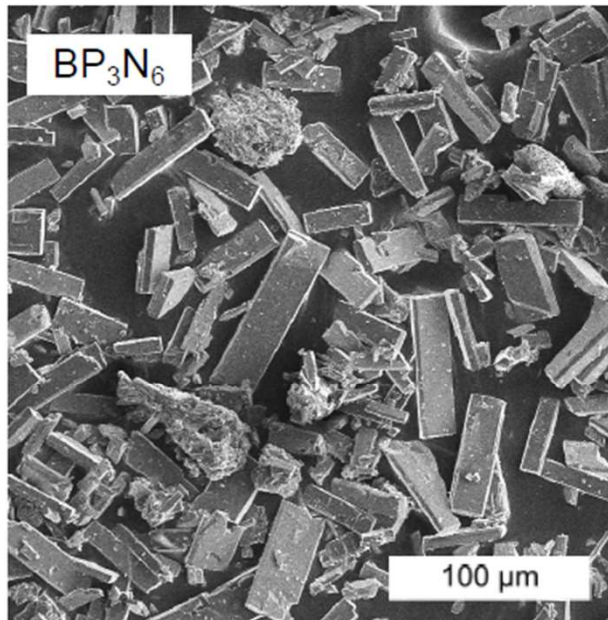


Regulation of α -ketoglutarate dependent dioxygenase TET3 – novel insights into epigenetic mechanisms in neurons



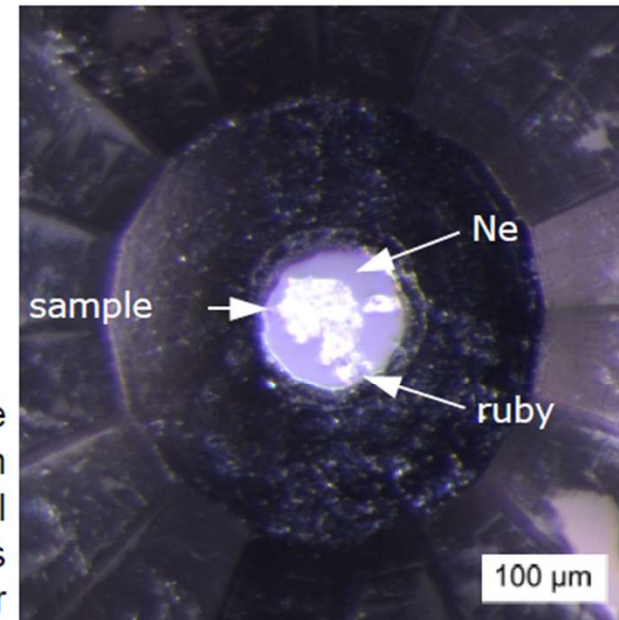
Phosphorus Nitrides at Extreme Conditions

Sebastian Vogel - AK Schnick



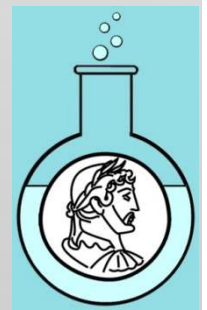
Synthesis of nitrides via acid-assisted high-pressure high-temperature reactions

In situ single crystal XRD in diamond anvil cells at pressures up to 500.000 bar



Einen mit 2.000 € dotierten PostDoc-Preis für
exzellente Leistungen erhielt

Dr. Petr Těšina

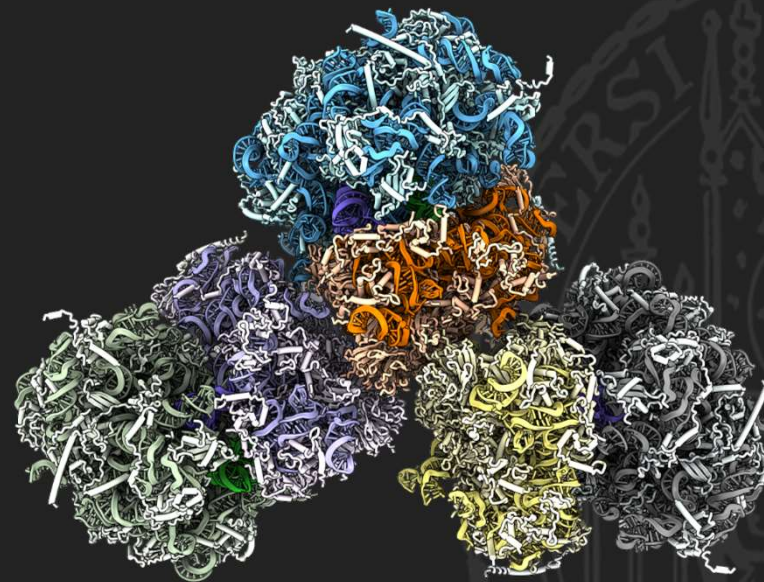


Petr Těšina
AG Beckmann



Strukturbiologie

Cryo-EM analysis of co-translational quality control

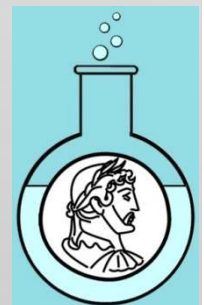


In der Kategorie Nachwuchsgruppenleiterinnen
und Nachwuchsgruppenleiter wurden mit
jeweils 4.000 € ausgezeichnet:

Dr. Dorian Didier

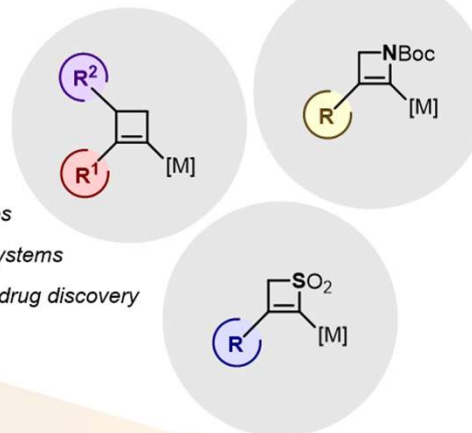
Dr. Hanna Engelke

Prof. Dr. Stefanie Kellner

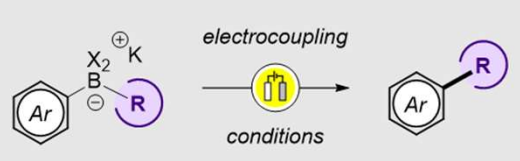
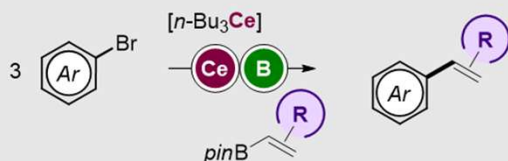


AK Didier - Dr. Dorian Didier - *Organic and organometallic chemistry*
*Synthetic strategies to access and functionalize
unsaturated four-membered
building blocks*


- cyclobutenes
 - azetines
 - thietes
- access to fused ring systems
 - applications in drug discovery


*Creation of
novel methods for
carbon-carbon bond formation*

- air-stable reactions
- boron-relayed strategies
- eco-friendly electrocoupling
- functional group tolerant
- catalyst-free



Dr. Michael Eisold
Dr. Andreas N. Baumann
Dr. Arif Music
MSc. Felix Reiners

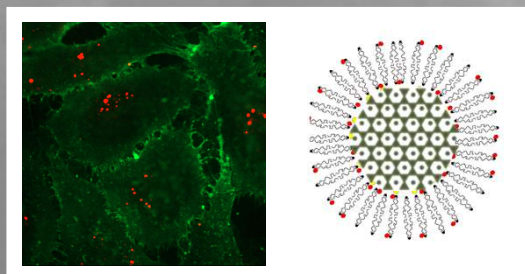
Hanna Engelke

Nachwuchsgruppe Physikalische Chemie

Jetzt: Pharmazeutische Chemie, Uni Graz



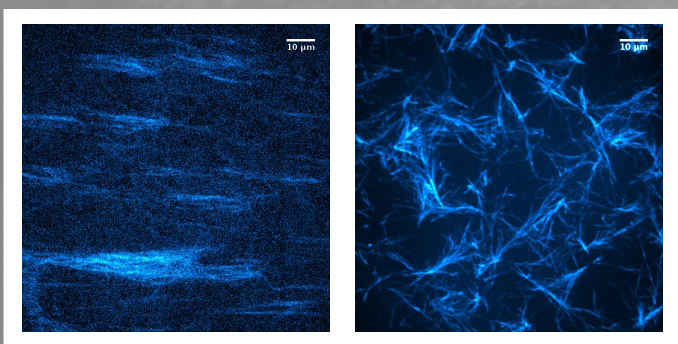
Mechanobiology of Cancer and Nanomedicine



Nanoparticles as Anti-Cancer Agents

Adv. Mater. 2020, Chem. Mater. 2017, Nanomaterials, 2017,...

How do mechanical properties of the matrix influence cell behavior?



Matrix Structuring

PlosOne 2019, Soft Matter 2018

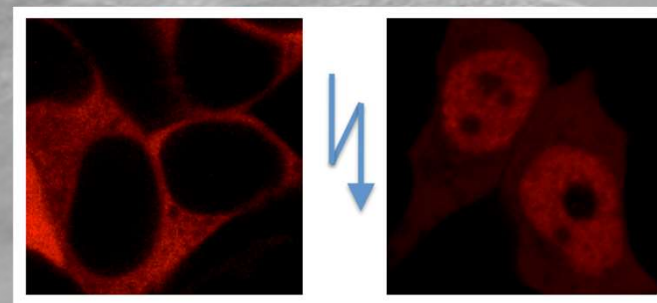
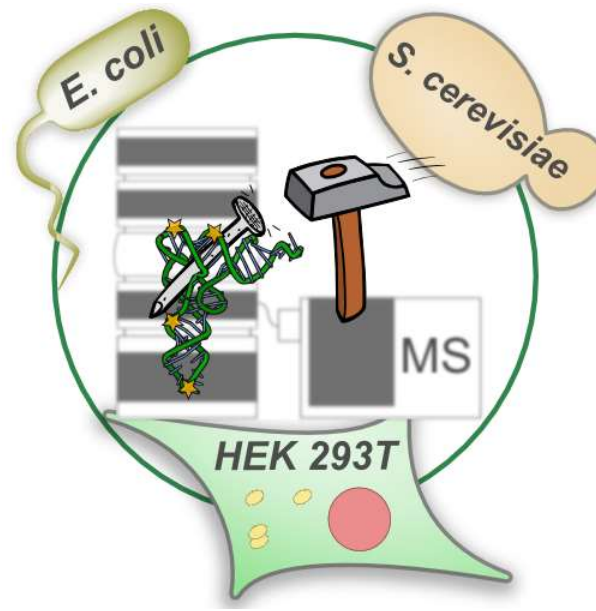


Photo-controlled Proteins

ACS Synth Biol. 2014, iScience under revision



Prof. Dr. Stefanie Kellner



Analytical Chemistry of
the epitranscriptome

Die Römer-Stiftung sowie
die Dozenten und Dozentinnen der
Departments Chemie und Biochemie
gratulieren den Preisträgern und
Preisträgerinnen herzlich!