Graphene edge chemistry and membrane formation with supramolecular approaches using Pt(II)-terpyridine molecular tweezers

Jiao, A.

List of publications

Calvani, D.*; Jiao, A.*; Kock, T. J. F.; Siegler, M. A.; Gupta, K. B. S. S.; Filippov, D. V.; de Groot, H. J. M.; Sevink, G. J. A.; Schneider, G. F.; Buda, F. Computational Modeling and Self-Assembly Synthesis of Borazine-Based Free-Standing Molecular-Thin Films. *Langmuir* **2026**, *42* (2), 2314–2327.

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*These authors contributed equally

Jiao, A., Siegler, M.A., Filippov, D.V., Bonnet, S., Schneider, G.F. Supramolecular binding between molecular tweezers and polycyclic aromatic hydrocarbons in solvent mixtures: antagonism between electrostatics and solvophobicity. *In preparation.*

Jiao, A., van der Ham, A., Filippov, D.V., Bonnet, S., Schneider, G.F. Structure-binding relationships for the interaction between Pt(II)-terpyridine molecular tweezers and polycyclic aromatic hydrocarbons. *In preparation.*

Curriculum vitae

Andy Jiao was born on the 29th of September 1996 in Leiden, the Netherlands. He spent the majority of his youth in Rotterdam, where he went to the Erasmiaans Gymnasium from 2008 to 2014 to obtain his high school diploma with a curriculum in both 'nature and health' and 'nature and technology'.

From 2014 to 2018, Andy studied Molecular Science and Technology (MST), which is a joint bachelor degree between Delft University of Technology and Leiden University. Driven by curiosity, particularly in innovative medicine, he completed his bachelor thesis on peptide-mediated membrane fusion utilizing pH-Low Insertion Peptides (pHLIPs) as lipid anchors in the Supramolecular & Biomaterials Chemistry (SBC) research group of Prof. dr. Alexander Kros.

After obtaining his bachelor degree, Andy followed the master Chemistry from 2018 to 2021 with a focus on Research and Chemical Biology at Leiden University. During this time, he pursued his interest in innovative medicine by conducting his major thesis in the Molecular Physiology (MolPhys) research group of Prof. dr. Mario van der Stelt on the synthesis of FMS-Like Tyrosine kinase 3 (FLT3) 7H-pyrrolo[2,3-d]pyrimidine-based inhibitors for Acute Myeloid Leukemia (AML). Afterwards, he carried out his minor thesis in the Metals in Catalysis, Biomimetics & Inorganic Materials (MCBIM) research group of Prof. dr. Sylvestre Bonnet on the synthesis and photochemistry of ruthenium complexes as light-activated heme analogues for photoactivated chemotherapy (PACT).

Immediately after obtaining his master's degree, Andy started his PhD in 2021 at the Leiden Institute of Chemistry (LIC) under the joint supervision of Dr. Grégory Schneider, Prof. dr. Sylvestre Bonnet, and Dr. Dmitri Filippov. Here, Andy continued broadening and deepening his research expertise by synthesizing Pt(II)-terpyridine molecular tweezers, characterizing their binding with Polycyclic Aromatic Hydrocarbons (PAHs), and investigating their integration in graphene nanopores for DNA-sequencing applications.

Over the course of his PhD, Andy collaborated closely with various departments within the LIC (SBC, CASC, MCBIM) and outside the LIC (Leiden Observatory) on interdisciplinary projects, bridging organic chemistry with computational chemistry, astrophysics and materials science. Moreover, he supervised two bachelor students and two master students during their thesis internships, as well as assisted in practical courses (Leren Onderzoeken 2, Practicum Basisvaardigheden,

Organische Chemie practicum) and theoretical courses (Scheikunde, Anorganische Chemie, Bionanotechnology) for bachelor and master students.

Furthermore, Andy followed several academic courses during his PhD provided by Leiden University (Academic Writing for PhDs, Use Your Brain, Data Management, Scientific Conduct) and the Physical Methods in Inorganic Chemistry (PhMIC) organized by the Holland Research School of Molecular Chemistry (HRSMC). Additionally, he presented his work at several national and international conferences and symposia through poster presentations (Chem2DMat 2021, CHAINS 2022, IUPAC|CHAINS 2023, Graphene2023, HRSMC Symposium 2023, Kroese-Duijsters Symposium 2023, Reedijk Symposium 2024) and an oral presentation at CHAINS 2024 in Veldhoven.

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When I first joined the Schneider group, I immediately got the warmest welcome from Alex, Thomas, Max, Weizhe, Guangya, Nemo, Erik and Batuhan. Later, I hope to have paid this welcome forward to Xiaofang, Jianwei, Kees, Esmay, Yukun, Mikhail, Pim and Carolina. Thank you all so much for your help and good times on the lab and in the offices. I have particularly fond memories of all the discussions in our offices in the late afternoon, when we could chatter about all kinds of interesting science and personal topics, and vent all our frustrations over failed experiments and whatnot.

In the first few years, I have spent most of my time on the EE4 lab with the kindest and craziest organic chemists I have ever met. Thank you Koen R., Koen V., Tim, Jacob, Florian, Roy de Boy, Jurriaan, Daan, Dennis W., Anne-Mei and many more, for the greatest times in and outside of the lab. Your skills in organic synthesis have been tremendously helpful, and morale has never been low with the Totale Escalatie mix on Friday evenings.

I want to thank my close collaborators, staff members and students, without whom the research would never have been possible. Dario, Sergi, Jerry, Domenik, Katie and Julia, for the deeply enjoyable collaborations in astro-, computational and surface chemistry. Fons, Karthick and Maria for your expertise and kindness in the NMR department. Charlotte, Viorica, Sipeng, Hans, Federica, Luc, Nico, Bobby and Rian for your technical expertise and help in general lab management. My students Aylin, Benoît, Ming-Kai, Thijmen, Floran, Jason and Kinza for your amazing work and making teaching so enjoyable.

Because of my unusual topic at the crossroads of organic, inorganic, physical, supramolecular and 2D chemistry, I have gotten the rare opportunity to be part of

three different groups: SBC, MCBIM and BioSyn. As a result, I have gotten to enjoy all types of group activities (outdoor events, WooPings, group dinners, etc.), and the opportunity to knock on so many doors for (non-)scientific discussions. Thank you, Irene for your expertise in host-guest chemistry. Thank you, Vasiliki, Seline, Sabine, Tony, Stef and Rob for making the teaching hours much more fun. Thank you, Ying, Nol, Wessel, Maarten, Yurii, Sjoerd, Lan, Valeriia, Dennis D., Christian, Abhishek, Dinghao, Indigo, Xiaoyao, Sofiia, Josien, Jorn, Dimitris, Jasper, Lin, Julia and many others for always being open to help me in the labs. I am happy that I was able to reconnect with my older buddies Rafaël, Sven, Bas and Sebas during our PhD, so we could support each other in this journey as well.

Finally, I want to express my gratitude to the people who constantly supported me despite not always understanding the science I have been working on. Mom for never missing opportunities for taking care of me. Dad for always believing in me and supporting my goals. Elly for being the amazing sister I can always rely on.

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