



Win Day

Friday June 2, 2023
8:30 AM | QNC 0101



UNIVERSITY OF
WATERLOO



WATERLOO INSTITUTE FOR

nanotechnology

Agenda

2 June 2023

START	END	EVENT	VENUE
8:30	9:00	Registration and Coffee	QNC 0101
9:00	9:05	Territorial Acknowledgement and Welcoming Remarks <i>Sushanta Mitra, Executive Director, WIN</i>	
9:05	9:10	Opening Remarks from the Office of Research <i>Bernard Duncker, Associate Vice President, Research and International, University of Waterloo</i>	
9:10	9:50	WIN Rising Star Talk (Introduction by Sushanta Mitra) <i>Letian Dou, Purdue University - 2023 Winner</i>	
9:50	10:00	Morning Break	QNC 0101
10:00	10:05	Welcome Address to WIN Members <i>Sushanta Mitra, Executive Director, WIN</i>	
10:05	10:10	Introduction of New WIN Member <i>Elisabeth Prince, WIN Core Member</i>	
10:10	10:15	Introduction of WIN Existing Member <i>German Sciaini, WIN Core Member</i>	
10:15	10:20	Quantum Nano Fabrication & Characterization Facility (QNFCF) <i>Nathan Nelson - Fitzpatrick, Director QNFCF</i>	
10:20	10:45	Research Programs & International Partnerships <i>Lisa Pokrajac, WIN Assistant Director</i>	

Agenda

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START	END	EVENT	VENUE
10:45	11:10	Business Development & Entrepreneurship <i>Oleg Stukalov, Former WIN Business Development Manager</i>	
11:10	11:20	Events & Community Engagement <i>Kendra Goertz, WIN Operations & Marketing Coordinator</i>	
11:20	11:35	Space Management by WIN <i>Kyle Murphy, WIN Space Coordinator</i>	
			QNC 0101
11:35	11:45	Budget Presentation <i>Sushanta Mitra, WIN Executive Director</i>	
11:45	11:55	Q&A Session with WIN Community <i>Sushanta Mitra, WIN Executive Director</i>	
11:55	12:00	Closing Remarks <i>Bernard Duncker and Sushanta Mitra</i>	
12:00		Networking Lunch <i>Poster presentation of WIN seed funded projects 2018 – 2022</i>	QNC 1st floor atrium
1:00		End of Event	



Letian Dou

Charles Davidson Associate Professor

Davidson School of Chemical Engineering, Purdue University

Department of Chemistry, Purdue University

Birck Nanotechnology Center, Purdue University

Dr. Letian Dou is currently the Charles Davidson Associate Professor of Chemical Engineering and Chemistry (by courtesy) at Purdue University. He obtained his B.S. in Chemistry from Peking University in 2009 and Ph.D in Materials Science and Engineering from UCLA in 2014. From 2014 to 2017, he was a postdoctoral fellow at University of California-Berkeley and Lawrence Berkeley National Laboratory. His research interest includes the design and synthesis of organic-inorganic hybrid materials and low-dimensional materials, fundamental understanding of the structure-property relationships, as well as applications in high performance electronic and optoelectronic devices. He is a recipient of Purdue College of Engineering Faculty Excellence Award for Early Career Research (2023), Waterloo Institute for Nanotechnology (WIN) Rising Star Award (2022), AIChE Owens Corning Early Career Award (2022), NSF CAREER Award (2021), Advanced Materials Rising Stars Award (2021), Office of Naval Research Young Investigator Award (2019), Highly Cited Researcher in Cross-Fields (2019-2022), MIT Technology Review Innovators Under 35-China Award (2018), and MRS Graduate Student Award (2014).

Organic Semiconductor-Incorporated Perovskites (OSiP) – A New Family of Hybrid Electronic Materials

Halide perovskites are exciting new semiconductors that show great promising in low cost and high-performance optoelectronics devices including solar cells, LEDs, photodetectors, lasers, etc. However, the poor stability is limiting their practical use. In this talk, I will present the development of a new family of stable organic-inorganic hybrid electronic materials, namely, Organic Semiconductor-Incorporated Perovskites (OSiP). Energy transfer and charge transfer between adjacent organic and inorganic layers are extremely fast and efficient, owing to the atomically-flat interface and ultra-small interlayer distance. Moreover, the rigid conjugated ligands dramatically enhance materials' chemical stability and suppresses solid-state ion diffusion and electron-photon coupling, making them promising for many applications. Based on this, we demonstrate for the first time an epitaxial halide perovskite heterostructure with near atomically-sharp interface, which pave the way for perovskite nanoelectronics and nanophotonics. Finally, using this stable and solution-processable OSiPs, we demonstrate the fabrication of high-quality thin films, which enable highly stable and efficient solar cells and LEDs.

Presenters



Elisabeth Prince

Assistant Professor, Chemical Engineering;
Waterloo Institute for Nanotechnology,
University of Waterloo

Professor Elisabeth Prince recently joined WIN as a new core member. Learn more about Dr. Prince and her research by following this [link here](#).



Germán Sciaini

Professor, Chemistry; Canada Research Chair in Atomically-Resolved Dynamics & Ultrafast High-Resolution Imaging
Waterloo Institute for Nanotechnology,
University of Waterloo

Learn more about Dr. Sciaini and his research by following this [link here](#).



Nathan Nelson – Fitzpatrick

Director
Quantum Nano Fabrication & Characterization Facility (QNFCF),
University of Waterloo

Learn more about Dr. Nelson-Fitzpatrick and his work at the QNFCF by following the [link here](#).

Presenters



Sushanta Mitra

Executive Director;
Waterloo Institute for Nanotechnology
Professor, Mechanical & Mechatronics Engineering
University of Waterloo



Lisa Pokrajac

Assistant Director, Research Programs
Waterloo Institute for Nanotechnology,
University of Waterloo



Oleg Stukalov

(Former) Business Development Manager
Waterloo Institute for Nanotechnology,
University of Waterloo



Kendra Goertz

Marketing and Operations Coordinator
Waterloo Institute for Nanotechnology,
University of Waterloo



Kyle Murphy

Space Coordinator
Waterloo Institute for Nanotechnology,
University of Waterloo

Poster Presenters

Jacob Chaussé

Student
Nanotechnology Engineering
University of Waterloo

Guillaume Fernandes

Student
Nanotechnology Engineering
University of Waterloo

Isoflex: A Flexible and Multi-Directional Force Sensor

Ali Eskandari

Student
Chemical Engineering
University of Waterloo

Influence of Indium (III) Chloride on Human Dermal Fibroblast Cell Adhesion on Nano-Composites Structure

Lauren Prophet

Student
Nanotechnology Engineering
University of Waterloo

Brandon Klassen

Student
Nanotechnology Engineering
University of Waterloo

CT Murphy

Student
Nanotechnology Engineering
University of Waterloo

Collect: Sanitary Product Filter Matrix for Passive Separation of Cells for Menstrual Fluid Diagnostics

Yazan Qudsi

Student
Nanotechnology Engineering
University of Waterloo

Adnan Fakhouri

Student
Nanotechnology Engineering
University of Waterloo

Trees to Electric Leaves (T2EL)

Jiyuan Wang

Graduate Student
Physics
University of Waterloo

Imaging proteins in retina as biomarkers of early Alzheimer's Disease

Manila Ozhukil Valappil

Post-Doc
Chemical Engineering
University of Waterloo

Electrochemical Exfoliation of Transition Metal Dichalcogenides for Printed Optoelectronic Devices
