



2023-2024 POCC Lecture Series

Dec 7, 2023, 7:30 PM

Prof. Sophie Rousseaux

University of Toronto

*New Strategies for the Synthesis and
Functionalization of Small Rings and Nitriles*

IN PERSON @:

Carolyn Hoff Lynch Lecture Hall Chemistry Building,

University of Pennsylvania

6:30 Reception in the Nobel Hall

Food and drinks to be provided!

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Abstract: Accessing medicinally relevant small molecules in a more efficient and/or safer manner continues to drive important discoveries in synthetic organic chemistry. My group is particularly interested in the development of new Ni-catalyzed processes and/or the use of readily available building blocks to access complex small molecules. Two areas of research that are of particular interest in my group will be highlighted in this presentation. In the first part of this talk, I will discuss our recent work on the synthesis and functionalization of small rings, including cyclopropanols, cyclopropylamines, and cyclobutanols. Reactions involving electrophilic metal homoenolates will be presented as well as Ni-catalyzed cross-couplings to functionalize cyclopropanols and cyclopropylamines. In part two, I will describe our efforts to develop new synthetic methods for the preparation of nitrile-containing building blocks that use inexpensive and less toxic nitrile-transfer reagents. Recent work on the development of Ni-catalyzed reductive transnitration reactions will be presented.

Bio: Sophie Rousseaux obtained a B.Sc. in Biopharmaceutical Sciences – Medicinal Chemistry from the University of Ottawa, Canada, in 2007. As an undergraduate student, she worked with Prof. Keith Fagnou on the direct arylation of pyridine N-oxides and decarboxylative ketone aldol reactions. She remained in the Fagnou group for the start of her graduate studies, working on Pd-catalyzed aliphatic C–H bond functionalization reactions. In 2010, she moved to MIT to complete her graduate research with Prof. Stephen L. Buchwald, working on Pd-catalyzed dearomatization reactions. In 2012, she moved to the University of Oxford to work with Prof. Harry L. Anderson on the self-assembly of porphyrin nanorings as an NSERC postdoctoral fellow and Glasstone Research Fellow. During her time at Oxford, Sophie also held a Junior Research Fellow at St John's College (2012–2015) and was a Stipendiary Lecturer in Organic Chemistry at Jesus College (2014). In July 2015, Sophie returned to Canada to join the Department of Chemistry at the University of Toronto as an Assistant Professor, where she was promoted to Associate Professor in July 2022. She holds a Canada Research Chair (Tier 2) in Organic Chemistry since 2016. Her group's research interests include organic synthesis, catalysis, and organometallic chemistry, with a particular focus on the synthesis of small rings and nitrile-containing molecules. Selected recent awards include the CSC Keith Fagnou Award (2023), the McLean Award (2022), the University of Toronto School of Graduate Studies Early Career Supervision Award (2022), the Organic Letters Outstanding Publication of the Year Lectureship (2022), a Sloan Research Fellowship (2021), an Ontario Early Researcher Award (2021), and the Dorothy Shoichet Women Faculty Science Award of Excellence (2020).

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