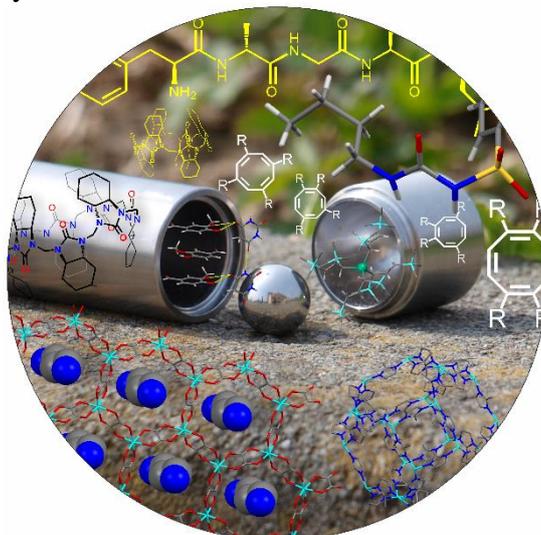


## Mechanochemistry: A New System of Chemical and Materials Synthesis, Geared for Sustainability and Efficiency

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Mechanochemistry has over the past 20 years developed from a laboratory curiosity into a versatile methodology for the synthesis of molecules and materials, without requiring bulk solvents.<sup>[1]</sup> This inherently sustainable aspect of mechanosynthesis, combined with unexpected new opportunities offered by mechanochemical reactivity, including access to novel reactions and previously challenging molecular targets,<sup>[2]</sup> as well as efficient materials screening and discovery protocols, have made mechanochemistry a very likely cornerstone for a new, more efficient paradigm<sup>[3]</sup> of chemical synthesis. These aspects of mechanochemistry have recently been augmented by scalable technologies such as twin screw extrusion<sup>[4]</sup> and resonant acoustic mixing, making mechanosynthesis<sup>[5]</sup> attractive for chemical manufacturing at larger scales.



This presentation will provide a brief introduction to the field, noting the emergence of mechanochemistry-focused research networks on both sides of the Atlantic, and highlight select contributions from our team, and others, on mechanochemistry for molecular synthesis, materials discovery and processing of raw materials.

**References:** [1] James *et al.* *Chem. Soc. Rev.* **2012**, *41*, 413; [2] Do, Friščić *ACS Cent. Sci.* **2017**, *3*, 13; [3] Do, Friščić *Synlett* **2017**, *28*, 2066; [4] Crawford *et al.* *Chem. Sci.* **2015**, *6*, 1645; [5] Friščić, Mottillo, Titi *Angew. Chem. Int. Ed.* **2020**, *59*, 1018.

**Short bio:** Tomislav Friščić is a Professor and Tier-1 Canada Research Chair in Mechanochemistry and Solid-state Chemistry at the Department of Chemistry, McGill University. His team is developing solid-state strategies for environmentally-friendly synthesis and materials, and he is a co-founder of two “CleanTech” start-ups. He received his B.Sc. at the University of Zagreb with Branko Kaitner (2001), followed by a Ph.D. with Len MacGillivray at the University of Iowa (2006). He was a post-doctoral associate with William Jones (2006), a Herchel Smith Research Fellow at the University of Cambridge (2008), joining McGill University in 2011. He is the Chair of the Canadian National Committee for Crystallography, Fellow of the Royal Society of Chemistry, and his group’s work was recognized by several awards, including the Award for Research Excellence in Materials Chemistry of the Canadian Society for Chemistry (2019), Royal Society of Canada Rutherford Medal in Chemistry (2018), Steacie Prize for Natural Sciences (2018), and others.