CMCC Mechanochemistry Discussions

Online Seminar Series

Finding the Link between Polymer and Small Molecule Mechanochemistry

Livestreaming at 10:00 AM (CT)

THURS., December 15, 2022

on the CMCC YouTube Channel:
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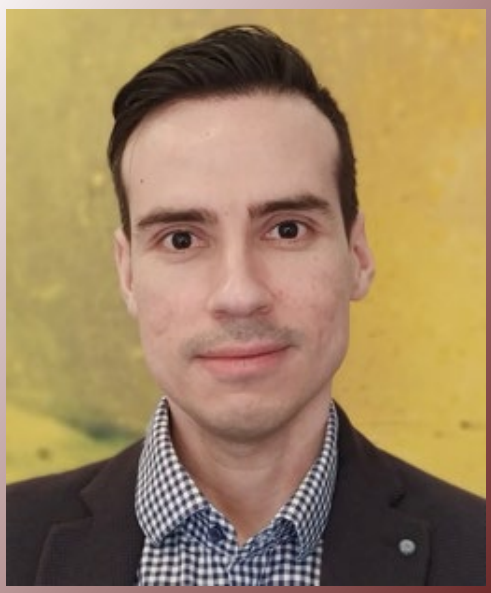

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ABSTRACT:
In the past decades, the scientific community both from the academia and more recently from industry have contributed to the unquestionable growth in popularity of mechanochemistry. Such an increasing interest has been partially motivated by the sustainability aspects and the methodological advantages that mechanochemistry offers compared to other more traditional activation modes. During this time, two main strategies have developed to produce physical or chemical responses in a system when mechanical force is applied. One of them, often called polymer mechanochemistry, relies on the use of polymers to transduce mechanical load to molecular units called mechanophores embedded along the polymer chain. This has been accomplished through pulsed-ultrasonication or atomic-force techniques. The second approach mostly makes use of milling techniques to bring together small molecules in bulk and provides the energy required for the system to react. At times, the methodological differences between both approaches seem to have created two seemingly distinct lines of thought within the field of mechanochemistry, which kept evolving mostly separately. However, finding ways to demonstrate the relationship between polymer and small molecule mechanochemistry will not only close the apparent gap between both branches but could also reveal synergistic opportunities to strengthen the field of mechanochemistry as a whole.

In this presentation a series of recent studies, which have found (sometimes inadvertently) links between polymer and small molecule mechanochemistry will be discussed. The aim of this reflection is helping to bring both areas closer together hopping to contribute to the consolidation of mechanochemistry in the future.

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