

Dist. Prof. & Dean  
Miguel A. Garcia-Garibay



Prof. Garcia-Garibay will deliver the public Jean Dreyfus Lectureship

Title:

## "Crystalline Molecular Machines"

Light refreshments will be provided and all are welcome to attend.

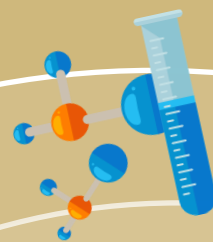
Wed Sep 6<sup>th</sup>  
5:30 - 6:30 PM  
ACAD 1600

For more information see: <https://clas.ucdenver.edu/chemistry/seminars-and-events>



Department of Chemistry  
COLLEGE OF LIBERAL ARTS AND SCIENCES  
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Dept. of Chemistry &  
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Artificial molecular machines have been described as discrete assemblies of molecular components intended to produce mechanical movements in response to specific stimuli, mimicking macroscopic devices such as switches, motors, pumps, compasses, and others. Meanwhile, molecular machines are at the core of many biological functions, including the transduction of sunlight to chemical energy (photosynthesis), molecular manufacturing (catalysis), macroscopic motion at the microbial (flagella) and human scales (muscles), sensing the world (vision), and many other functions, all which help demonstrate what may be possible. Growing interest in the exploration and design of molecular machines is stimulated by the possibility of developing new materials with complex physical, chemical, and mechanical properties that can be used for future technologies. With that in mind, we have shown that a new class of crystalline materials can be an ideal platform for the design of and construction of novel molecular machines. Such crystalline molecular machines will rely on structures based on a combination of static and rapidly moving components that are able to respond individually and collectively to external sources. Among them, molecular rotors are expected to have functions that rely on units designed to reorient in response to external electric or magnetic fields to display addressable physical properties. Additional strategies to control their internal motion are based on the use of light to control their motion and to execute work. This lecture will illustrate the development of these concepts, their realization and some of the tools used to measure their machine-like properties.



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