Poster Presentation

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Odd-Even Effect in the Elastic Modulii of α,ω-Alkanedicarboxylic Acids

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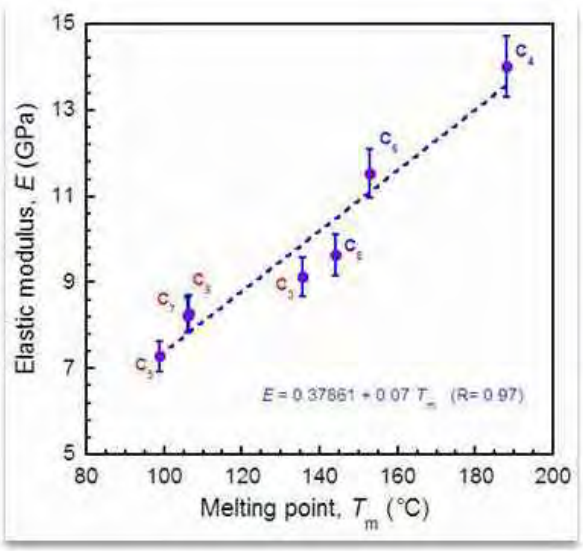
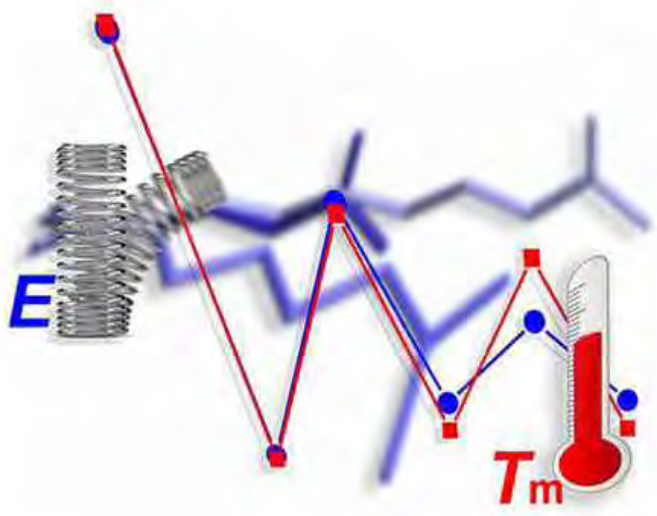
Nanoindentation is a probe used to quantitatively assess mechanical behavior of small volume materials. In this technique, load applied vs. the depth of penetration of the indenter into the specimen are measured simultaneously and with high precision and resolution. By analyzing the data, one can obtain the elastic modulus and hardness of crystals. Though this technique has been extensively used to characterize inorganic and engineering materials, we have recently extended its utility to study weak interactions and to establish structure-property relationships in molecular crystals. Being able to assess the relative strength of weak interactions such a technique has become relevant to the subject of crystal engineering which is concerned with the design of molecular solids with desired properties and functions. In our recent studies through nanoindentation on the alkanedicarboxylic acids reveals that the elastic modulus shows similar alternation property as the melting point alternation. Our results are endorsing the strained molecular conformations hypothesis for the melting point alternation of diacids, proposed by Thalladi et al. These results support the development of crystal engineering because nanoindentation may be used as a direct measure of molecular and crystal energies of molecular crystals.

[1] *Desiraju, G. R., Vittal, J. J. & Ramanan, A. (2011). Crystal Engineering: A Text Book, World Scientific, Singapore.,* ***[2]*** *Mishra, M.K., Varughese, S., Ramamurty, U. & Desiraju, G. R. (2013). J. Am. Chem. Soc. 135, 8121-8124.,* ***[3]*** *Varughese, S., Kiran, M. S. R. N., Ramamurty, U. & Desiraju, G. R. (2013). Angew. Chem. Int. Ed., 52, 2 - 14.*





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