

Students' Annual Seminar

Molecular models for ferroelectric phases of liquid crystals and Role of activity in mechanical properties of ultrastable glasses.

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The ferroelectric phase of liquid crystal was predicted over a century ago and revisited extensively since then but experimentally found only very recently. Besides its wide application, this phase remains scarce till now because the origin of this phase is still not clear. We aim to understand the microscopic mechanism which leads to the formation of this phase using computational tools. This would help to tailor the materials exhibiting the polar phase. The role of molecular structure, charge distribution, and interaction between molecules will be examined in the formation of such polar phases that remain liquid.

Then if time permits, I will discuss the mechanical properties of active ultrastable glass. Ultrastable glasses are brittle in nature, i.e. large deformation would trigger a shear band or crack. So, ductility control in such glasses is very promising for practical purposes. We want to study the role of activity in such a system. I would show how a brittle amorphous system yields in the presence of activity at a finite but low temperature.

Monday, Mar 20th 2023

04:00 PM (Tea / Coffee 3.45 PM)

Seminar Hall, TIFR-H