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SÉMINAIRE

Vendredi 24 juin, 10h30

Salle de Conférence, 4ème étage, Tour 22-23, Salle 1
IMPMC, Université P. et M. Curie, 4, Place Jussieu, 75005 Paris

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ELASTIC PHASE TRANSITIONS IN ALKALI MODIFIED OXIDE GLASSES

Chemical bonds in networks act as atomic constraints (both bond-bending and bond stretching kind) in assembling disordered solids. The count of constraints/atom has proved to be the single most significant parameter to understanding the physics of glasses including the elusive glass transition. These ideas have led to the recognition of two distinct elastic phase transitions- a *rigidity* and a *stress* transition as the count of constraints/atom is steadily increased either by chemical alloying or applying hydrostatic pressure. Experiments designed as test of these basic ideas show existence three elastic phases- *flexible*, *intermediate and stressed rigid* in semiconducting glasses with characteristic thermal, optical and mechanical signature. In alkali-modified-silicates, -germanates and -borates, these ideas show that packing considerations determined by alkali-ion size apparently control elastic phase diagrams in connectivity space. We provide examples.