

Programme

Journée BrainstormNano : Le désordre à l'échelle nanométrique en tant que ressource

9h15 Accueil / café

9h45 **Introduction**

Section 1 : Understanding and Conceptualizing disorder: From simple to complex systems

10h00 **Disorder as a degree of freedom for photonic materials.** Remi Carminati, Institut Langevin, Directeur Général de IOGS

10h40 **Disordered biomolecules in health and disease.** Sophie Zinn-Justin, Institute for Integrative Biology of the Cell (I2BC)

11h20 **Discussion :** How can we conceptualize disorder ? Is there different kinds of disorder? What statistical properties define them? Can physicists definitions be applied and used to characterize order/disorder in biological contexts? Should global or local formulations be used? Can physical/ chemical or biological systems profit from special kinds of disorder? Are mean field descriptions suitable for describing biological systems?

12h00 Pause déjeuner

Section 2 : Exploiting disorder : how can nanoscale disorder be explored for improving the efficiency of nanosystems ?

13h30 **Disorder in biological systems.** Bruno Robert, Institute for Integrative Biology of the Cell (I2BC)

14h10 **Self-organization of defects in liquid crystal materials and induced nanoparticle assemblies for new optical properties of these composites.** Emmanuelle Lacaze, Institut des Nano-Sciences de Paris (INSP)

14h50 **Discussion :** When does nanoscale disorder cease to be a problem and becomes an asset? Can lessons from biological systems be used to synthesize new nanomaterials / design new systems? Which mechanisms to controllably generate disorder? How scalable are they? In which conditions can order emerge from disorder?

15h30 Pause

Section 3 : Observing, measuring and characterizing nanoscale Disorder

16h00 **Observing disorder with synchrotron techniques.** Benedikt Lassalle, Synchrotron SOLEIL

16h40 **Infrared nanoscopy: a tool for monitoring disorder at the nanoscale.** Alexandre Dazzi, Institut de Chimie Physique (ICP)

17h20 **Discussion :** How to holistically characterize disordered nanoscale matter? Which measurements would be ideal to completely characterize disorder at the nanoscale? What experimental methodologies are available? How can single entity data be obtained? At which scale? Should stochastic or deterministic descriptions be preferred?

18h00
19h00 Bar de Sciences / debriefing