

Proposal of mini-colloquium
Journées de la Matière Condensée 2018
27-31 August 2018, Grenoble

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Structure of disordered systems

The colloquium aims to provide a forum for scientists interested in the structure of disordered systems (liquids, glasses, amorphous solids, crystals with disorder, etc) in order to discuss recent advances and future directions in this intriguing field of condensed matter physics, chemistry and materials science.

The two archetypal classes of disordered materials are liquids and glasses. Liquids such as water have no long-range order, but do display local correlation and order between molecules. Similarly, silicate glasses such as those used in everyday window panes are not crystalline materials - they are solids with no long range order, but again possess local order between atoms. These subtle structural correlations on the atomic and molecular length scale underpin the macroscopic properties of the material or system. For instance, understanding how to make toughened glass for aeroplane windows right down to mobile phone screens requires knowledge of the atomic structure of the material and the influence of the industrial manufacturing processes employed.

The experimental techniques and numerical methods used to study glasses and liquids are also useful for other systems with partial disorder, like nanoparticles. In recent years the pair distribution function (PDF) technique is being used to study quasi-ordered systems with some kind of disorder, as is the case of some minerals (clays and amorphous minerals, for instance).

The colloquium will have two introductory talks (30 min) on the structural determination of disordered systems by diffraction methods and/or simulation techniques, followed by about 7 short talks (15 min) covering topics as structure of liquids, ionic solutions, glasses, polymers and crystalline systems with some degree of disorder. They will also include analysis, simulation and experimental methods (ND, XRD, PDF, RMC, EPSR, MD, etc). These short talks will be given to young researcher in priority. For all participants, a poster session will allow to show their research in the field.

