



## Centre for Doctoral Training in Condensed Matter Physics

### CDT-CMP Seminar Series

2:30pm Tuesday 7<sup>th</sup> November 2017

### **‘Pressure induced structural changes in glassy materials’**

Dr. Anita Zeidler

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A prerequisite for designing glassy materials with new functional properties is an understanding of the structure, and the evolution of this structure under different state conditions. Here, pressure can be used as a tuneable parameter, and can induce abrupt structural changes as in polyamorphic transitions. The behaviour of glass under pressure is important for understanding phenomena such as crack formation and propagation, where pressures in the GPa regime are readily encountered. High pressures can also be used to form permanently densified glassy materials with altered mechanical and optical properties. But what are the mechanisms by which glass networks collapse under load? Can atomistic models be developed that have predictive capabilities?

We have investigated the structures of a range of oxide glasses by in situ high-pressure neutron diffraction. The results are combined with those obtained from other experimental techniques in order to deduce the mechanisms of structural transformation, and to develop realistic molecular dynamics models. We have found that the oxygen-packing fraction is a crucial parameter in determining when the pressure-induced transformations of a network topology are likely to occur.

**Room 3W4.1, University of Bath**

**Streaming to room 3.29, HH Wills Physics Laboratory, University of Bristol**

If you would like to meet with the speaker before or after the seminar,  
please contact [cdt-cmp@bristol.ac.uk](mailto:cdt-cmp@bristol.ac.uk)

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