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Tuning magnetic spirals beyond room temperature with chemical disorder EMMANUEL CANEVET, Paul Scherrer Institut, Laboratory for Neutron Scattering and Imaging, MICKAEL MORIN, ADRIEN RAYNAUD, MAREK BARTKOWIAK, Paul Scherrer Institut, Laboratory for Scientific Developments and Novel Materials, DENIS SHEPTYAKOV, Paul Scherrer Institut, Laboratory for Neutron Scattering and Imaging, VORAKSMY BAN, Paul Scherrer Institut, Swiss Light Source, MICHEL KENZELMANN, EKATERINA POMJAKUSHINA, KAZIMIERZ CONDER, MARISA MEDARDE, Paul Scherrer Institut, Laboratory for Scientific Developments and Novel Materials — In the past years, magnetism-driven ferroelectricity and gigantic magnetoelectric effects have been reported for a number of frustrated magnets with spiral magnetic orders. Such materials are of high current interest due to their potential for spintronics and low-power magnetoelectric devices. However, their low magnetic order temperatures (typically lower than 100K) greatly restrict their fields of application. In this talk we will show that chemical disorder is a powerful tool that can be used to stabilize magnetic spiral phases at higher temperatures. To illustrate this mechanism, we will present our recent results obtain by neutron diffraction on the perovskyte $YBaFeCuCuO_5$, where a controlled manipulation of the Cu/Fe chemical disorder was successfully used to increase the spiral order temperature from 154 to 310K.

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