Bruker / MIT Symposium 2026

JUST HOW HOT CAN WE GO?

Michael Ruf, Bruker AXS.; e-mail: michael.ruf@bruker.com

This presentation highlights how high temperature single crystal X ray diffraction enables direct insight into temperature driven structural changes in functional materials. Examples include Curie transitions, phase behavior in SiO_2, $BaTiO_3$, and thermoelectric systems, illustrating the central role of accurate structural data across wide thermal ranges.

The talk introduces the integration of the Oxford FMB hot air gas blower into the Bruker D8 VENTURE platform, allowing controlled heating of single crystal samples up to 1000 °C with full software support and minimal geometric restrictions. Case studies, including $Pb_5(VO_4)_3Cl$ and LLZO solid electrolytes, demonstrate rapid data collection and reliable refinement under extreme conditions, showing how laboratory instruments can now reach temperatures once accessible only at synchrotrons.