

EVALUATION OF TEMPERATURE CALIBRATION STANDARDS FOR HIGH TEMPERATURE DIFFRACTION

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The Task Group was designed to pool all available knowledge concerning temperature calibration for high temperature diffraction into a single, concise document. Thus far, input from approximately 5 laboratories has been compiled. An evaluation of the standards is in progress, and thus far the general behavior of each possible standard has been evaluated. The next step in the evaluation is to determine the feasibility of using the materials in a collective fashion to generate complete temperature calibration curves that span a wide temperature range. It is clear thus far that the standards which undergo solid state phase transformations are more simple to use in the typical laboratory environment. The materials that are used to define temperature by melting are often more difficult to use, especially those metals that are prone to rapid oxidation such as nickel or silicon.

The results to date will be presented, and will include the high and low temperature XRD patterns, an evaluation of the ease with which the transformations can be detected, and preliminary results on generating full temperature calibration curves.