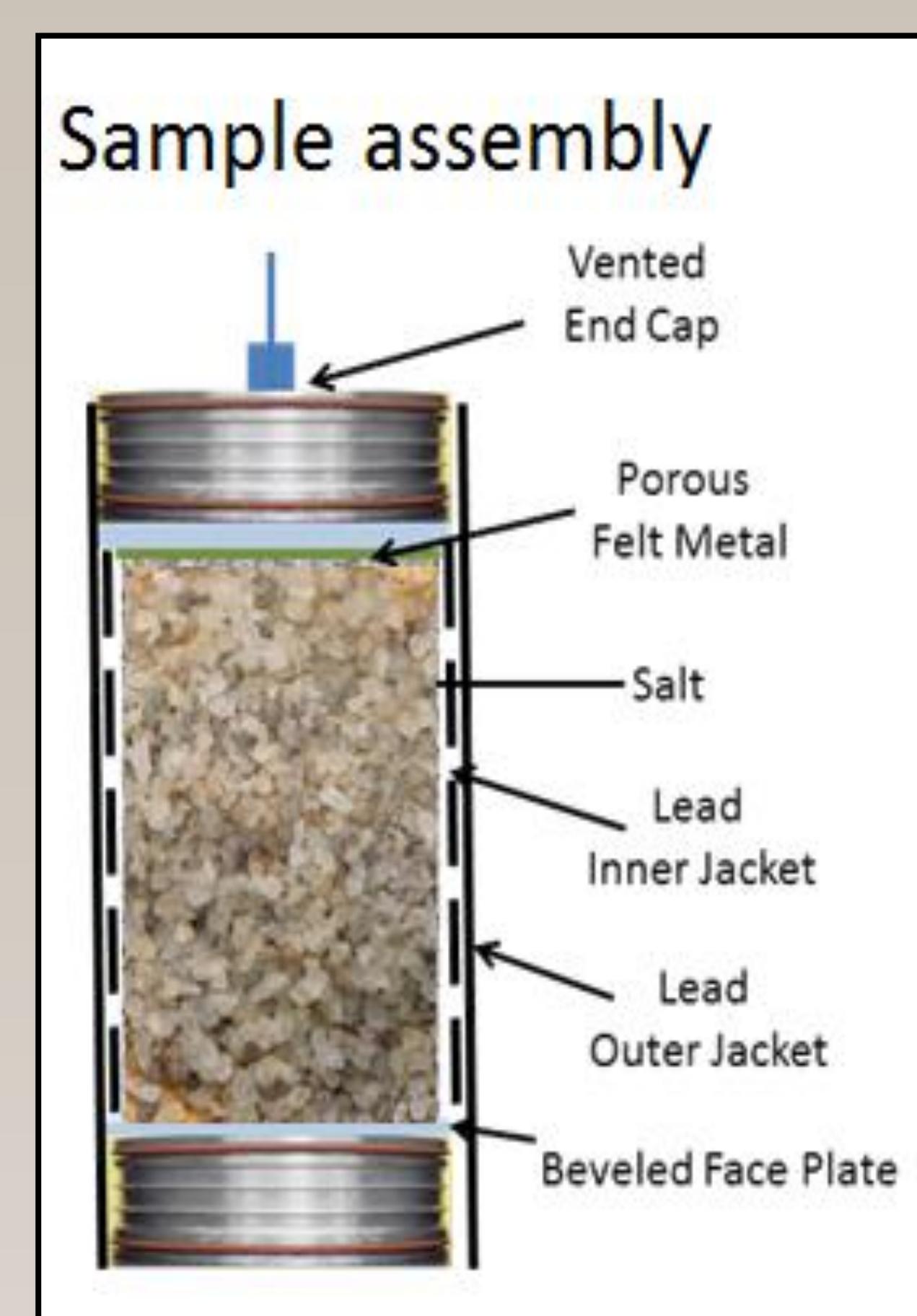


Thermal - Mechanical Properties of Reconsolidating Crushed Salt to 250° C Under Hydrostatic and Shear Stress Conditions*

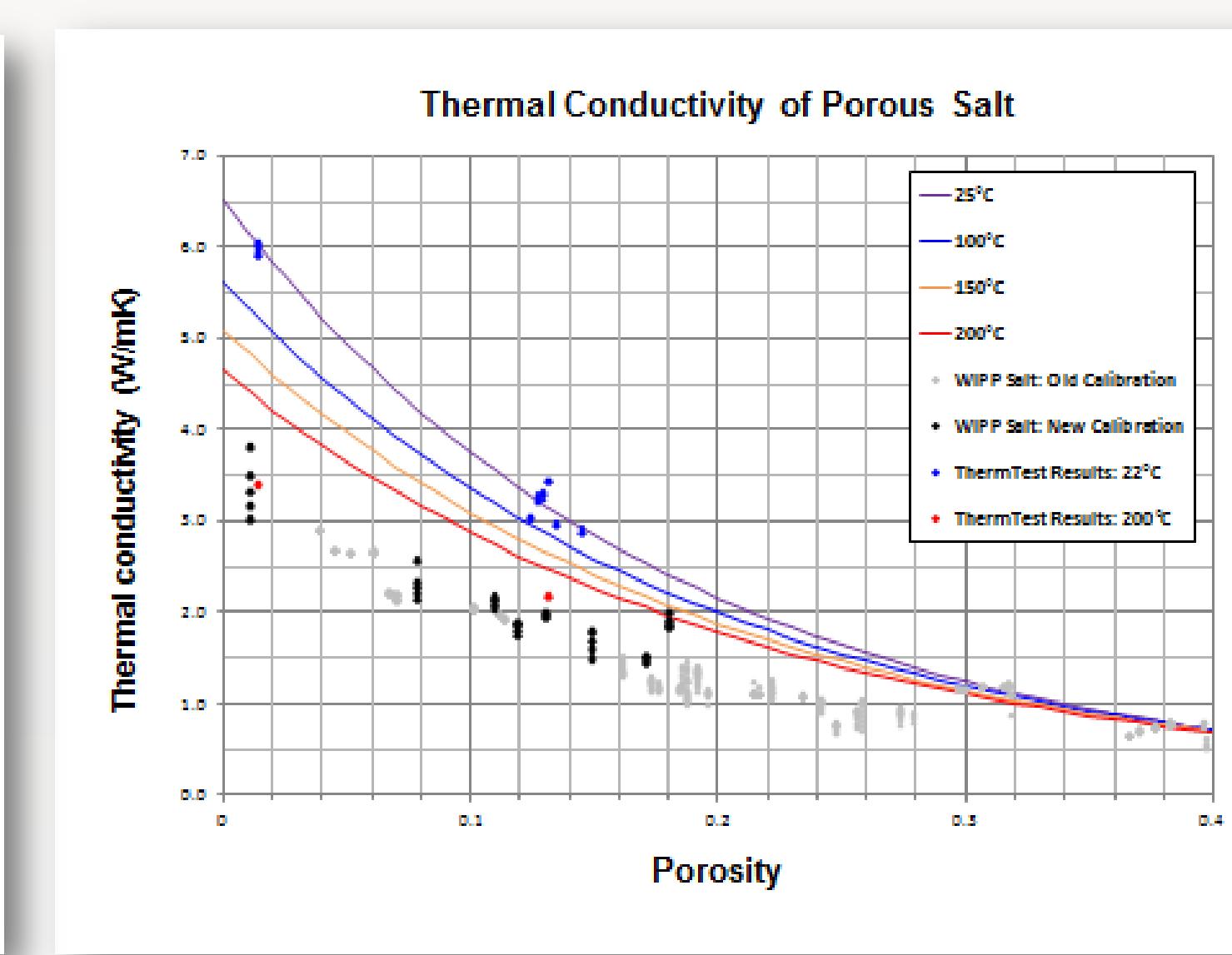
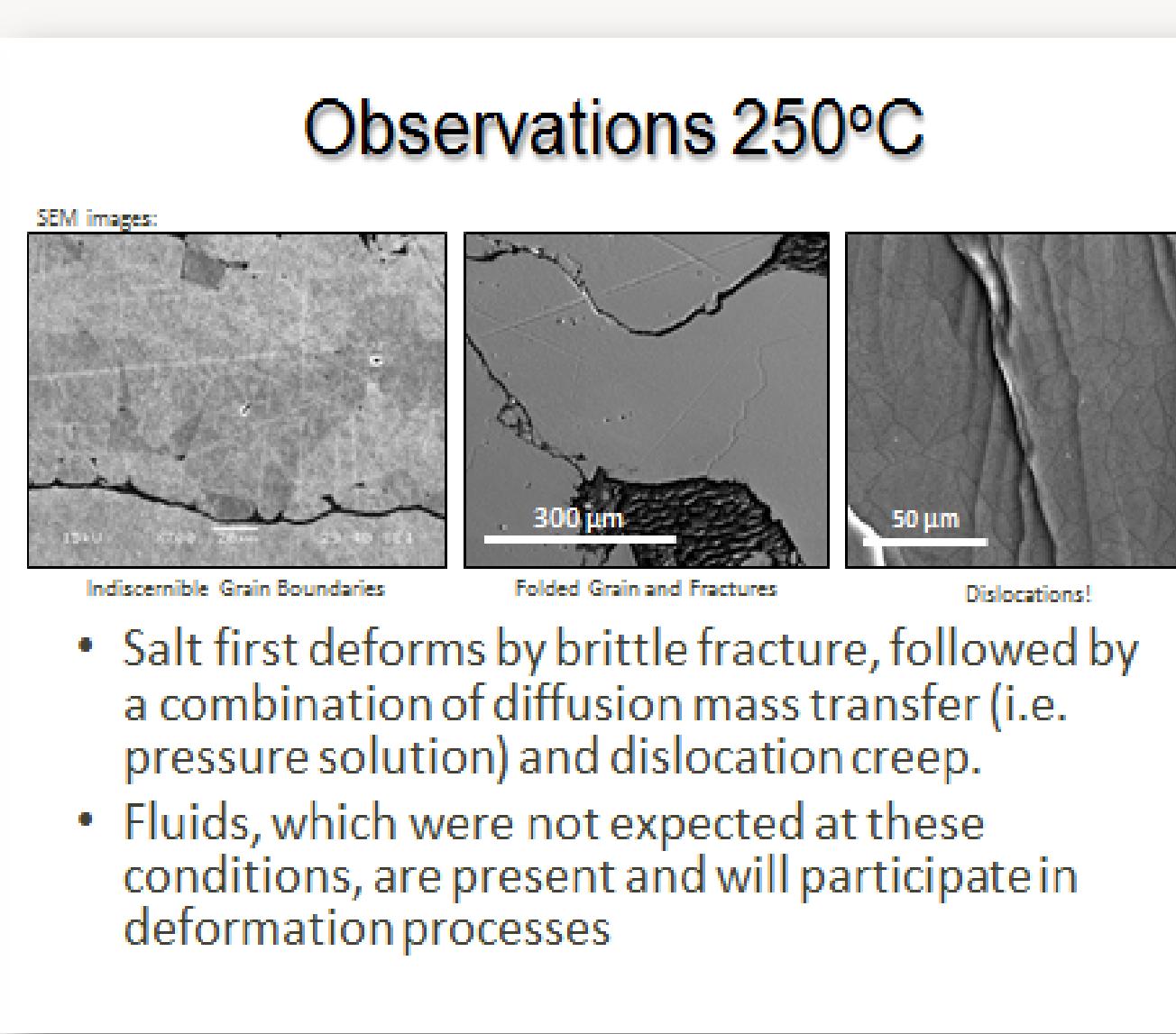
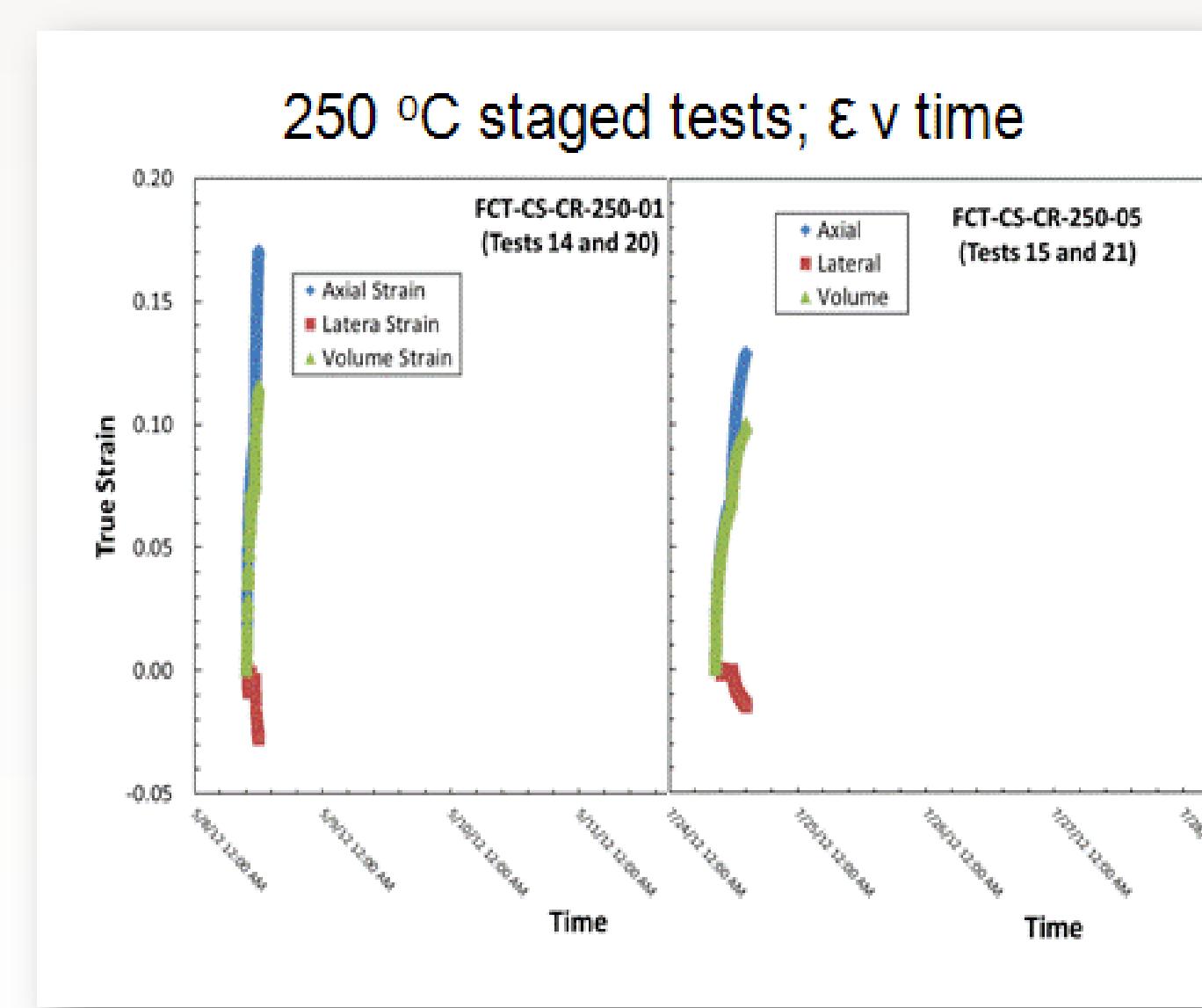
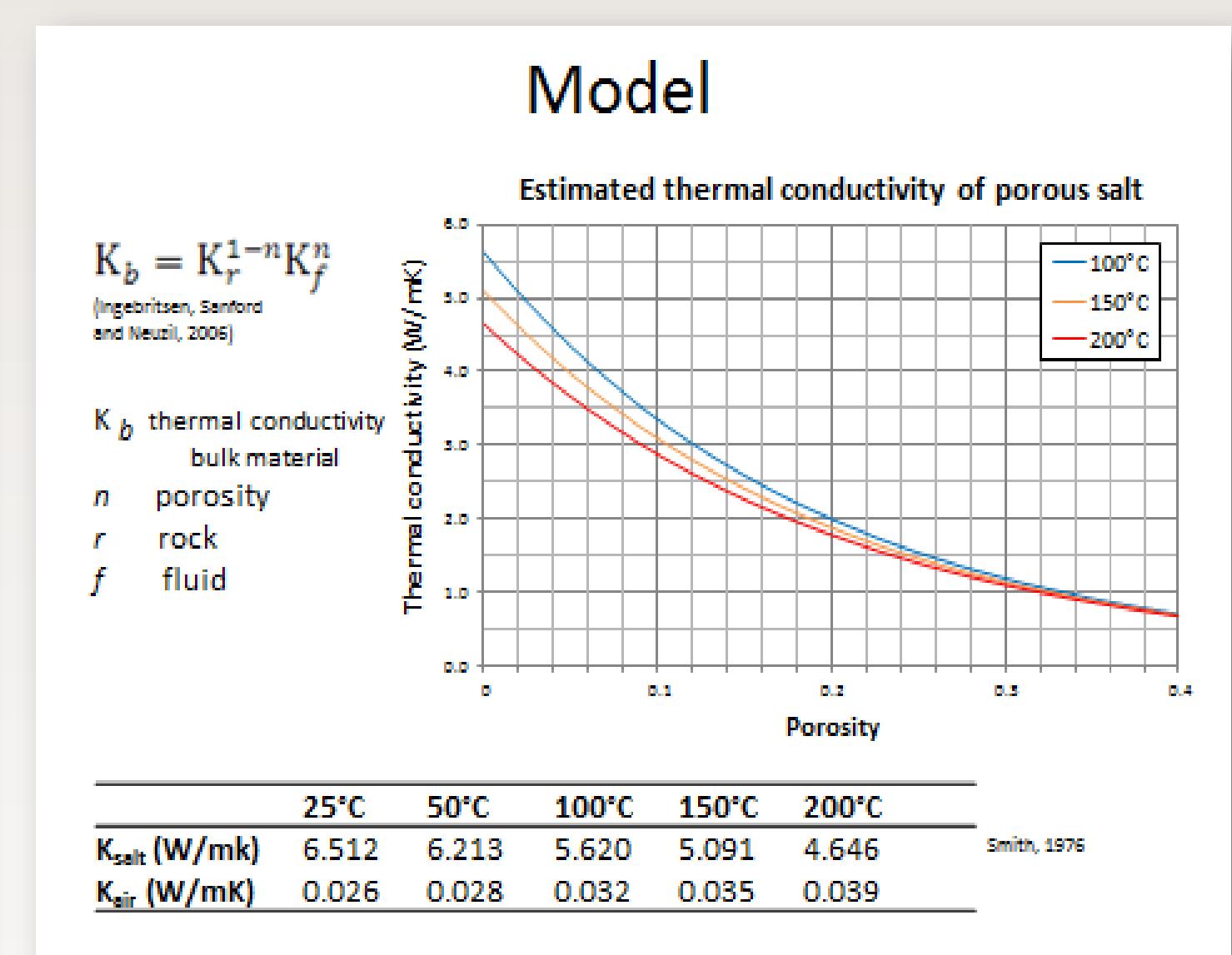
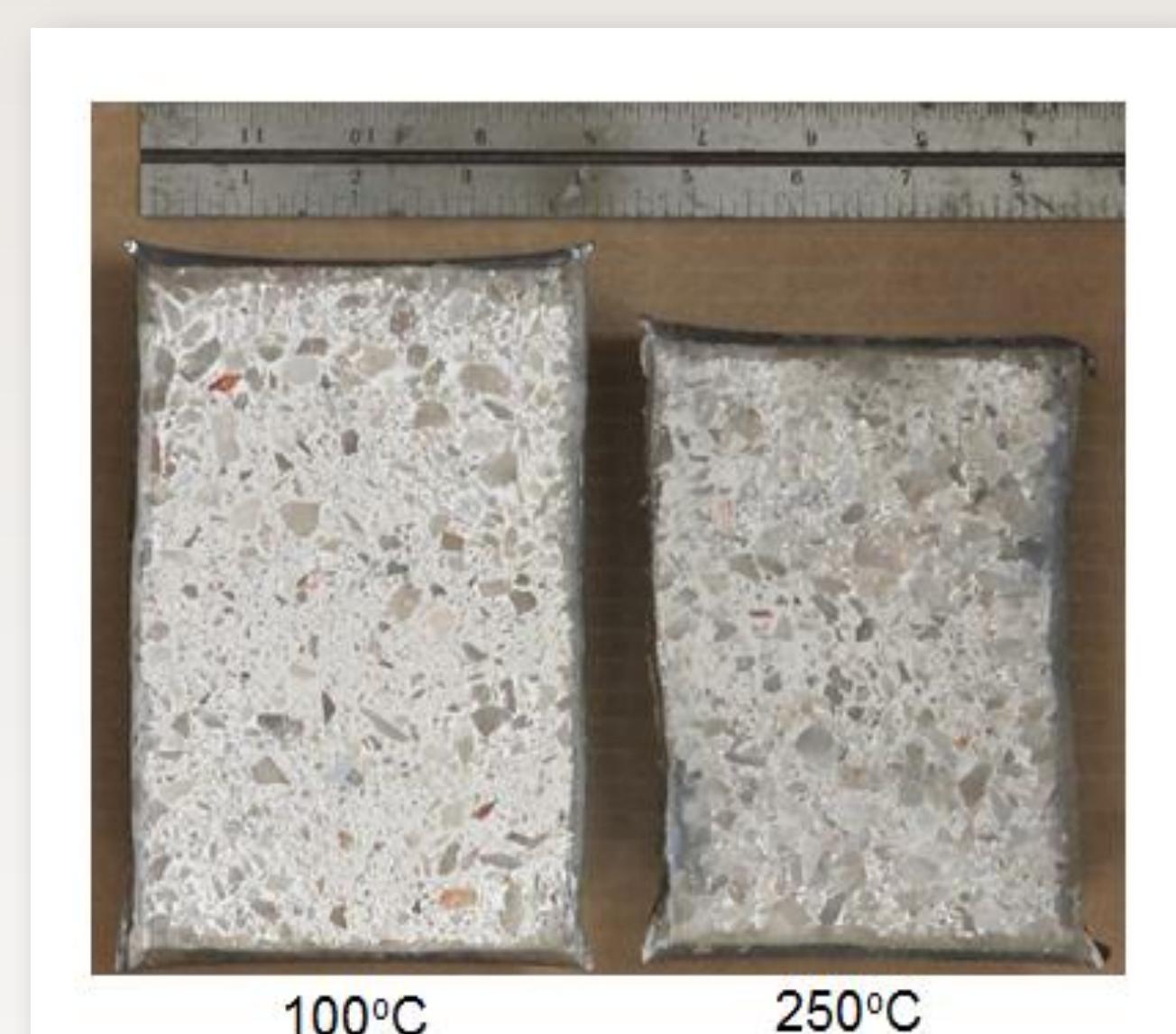
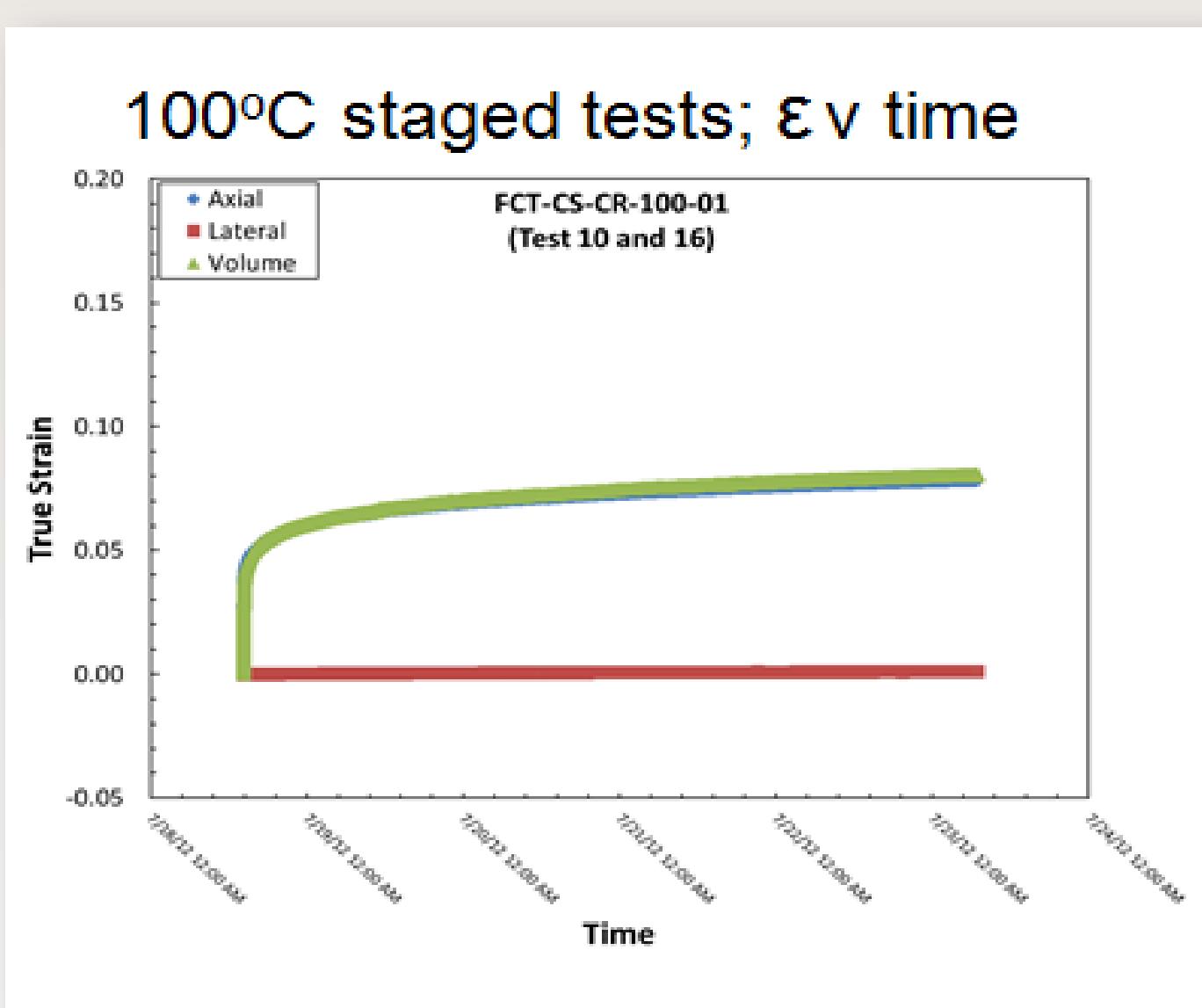
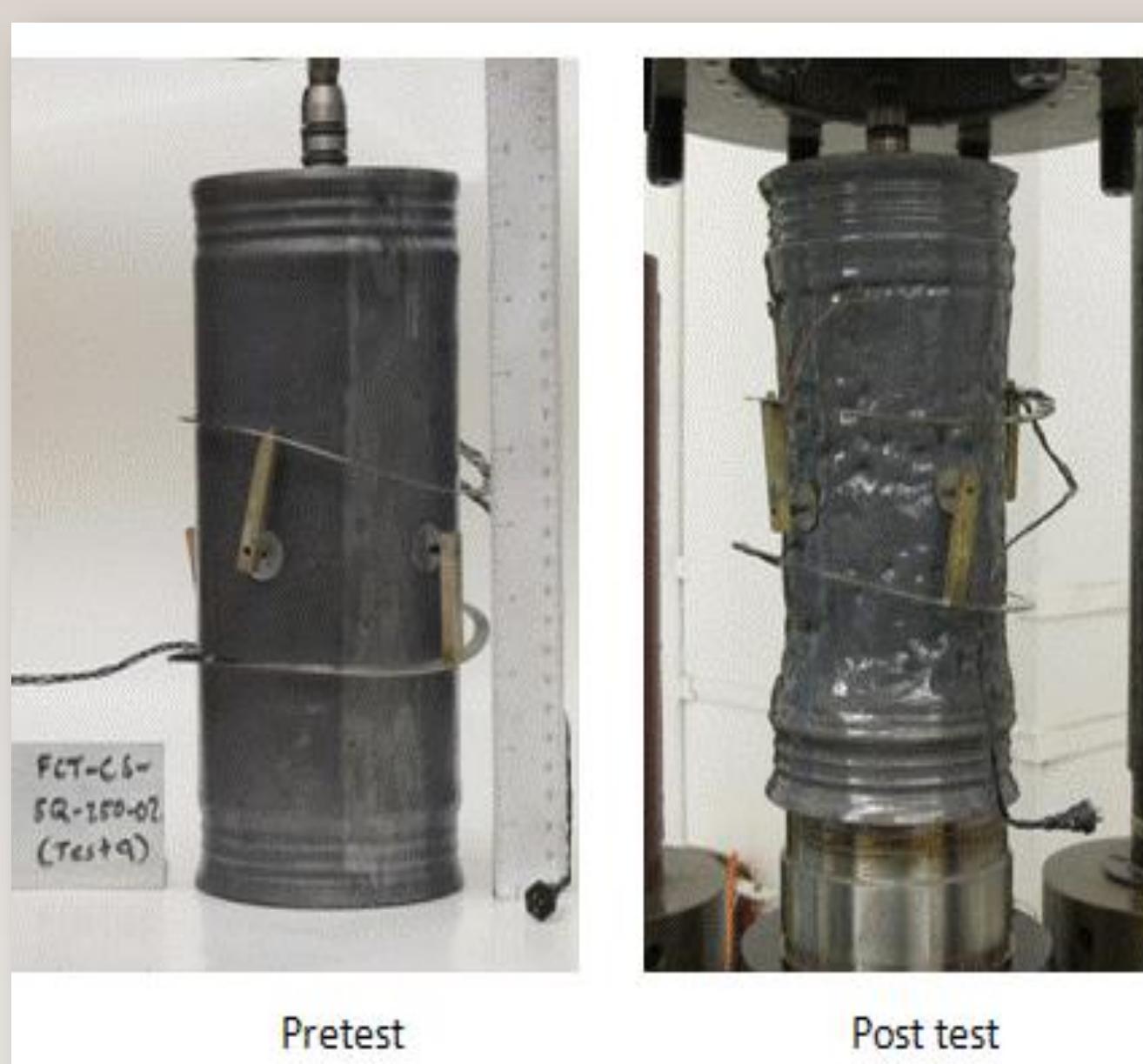
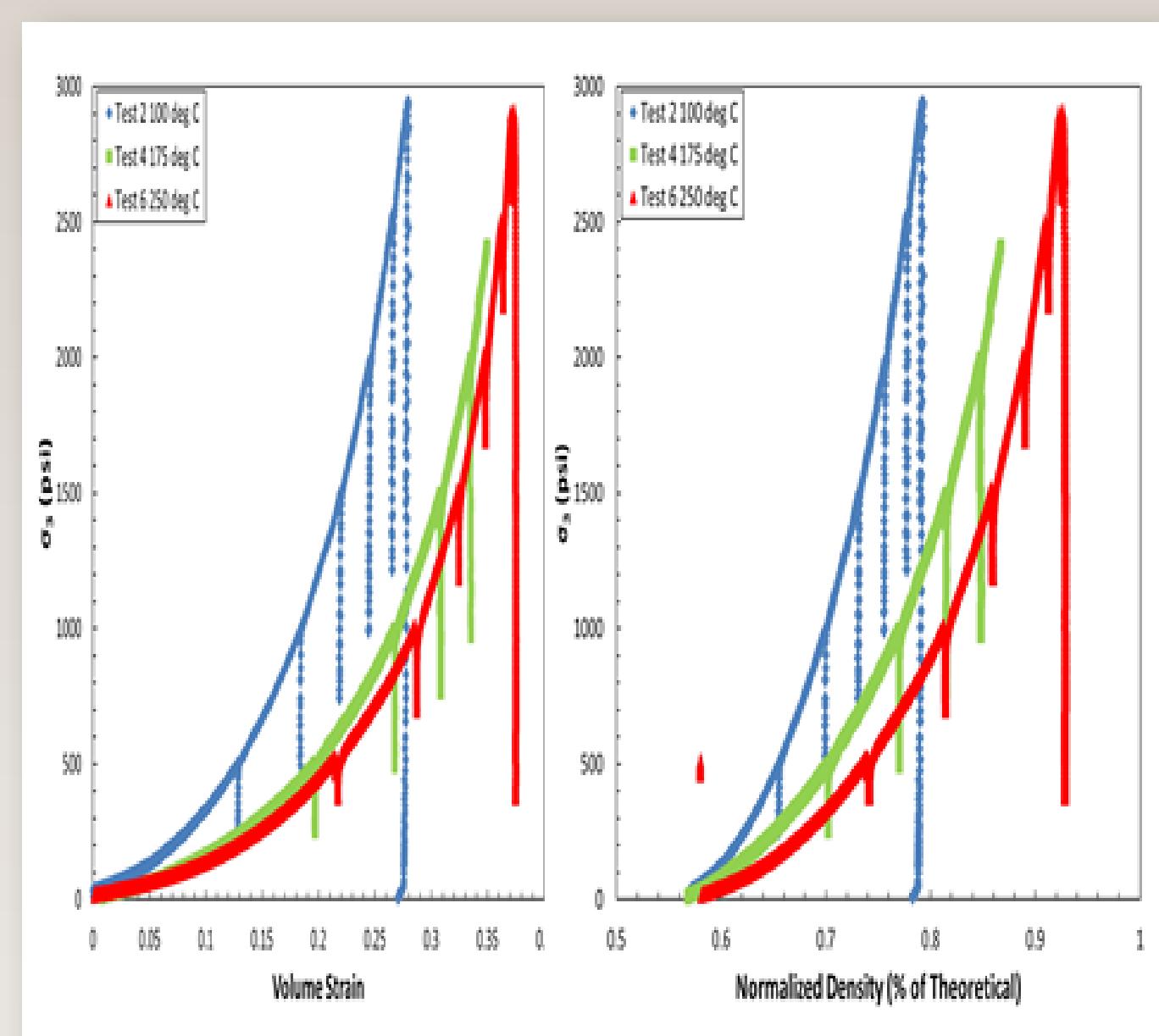
SAND2012-7163P

Design, analysis and performance assessment of potential salt repositories for heat-generating nuclear waste require knowledge of mechanical, thermal, and fluid transport properties of reconsolidating granular salt. Mechanical properties, Bulk (K) and Elastic (E) Moduli and Poisson's ratio (ν) and thermal properties, thermal conductivity (λ) and permeability (k) are functions of porosity which decreases as the surrounding salt creeps inward and compresses granular salt within the rooms, drifts or shafts.



*Hansen, Broome, Urquhart, Wells, and Bauer – Sandia National Laboratories

Mine-run salt was first dried at 105 °C for a few days. Undefomed right-circular cylindrical sample assemblies of unconsolidated granular salt with an initial porosity of ~ 40%, are jacketed in lead. Samples are placed in a pressure vessel and kept at test temperatures of 100, 175 or 250 °C overnight prior to testing; samples are vented to the atmosphere during the entire test procedure. At these test conditions the consolidating salt is always creeping, the creep rate increases with increasing temperature and stress and decreases as porosity decreases.



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