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High Temperature and High Pressure Mixtures of Iron Oxides from the Impact Event at the Bee Bluff Crypto-Meteorite Impact Crater of South Texas R.A. GRAHAM[1], The Tome Group — Disturbed geology within a several km diameter surface area of sedimentary Carrizo Sandstone near Uvalde, Texas, indicates the presence of a partially buried meteorite impact crater. Identification of its impact origin is supported by detailed studies but quartz grains recovered from distances of about100 km from the structure also show planar deformation features (PDFs). While PDFs are recognized as uniquely from impact processes, quantitative interpretation requires extension of Hugoniot materials models to more realistic grain-level, mixture models. Carrizo sandstone is a porous mixture of fine quartz and goethite. At impact pressures of tens of GPa, goethite separates into hematite and water vapor upon release of impact pressure. Samples from six different locations up to 50 km from the impact site preserve characteristic features resulting from mixtures of goethite, its water vapor, hematite and quartz. Spheroids resulting from local radial acceleration of mixed density, hot products are common at various sites. Local hydrodynamic instabilities cause similar effects.

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