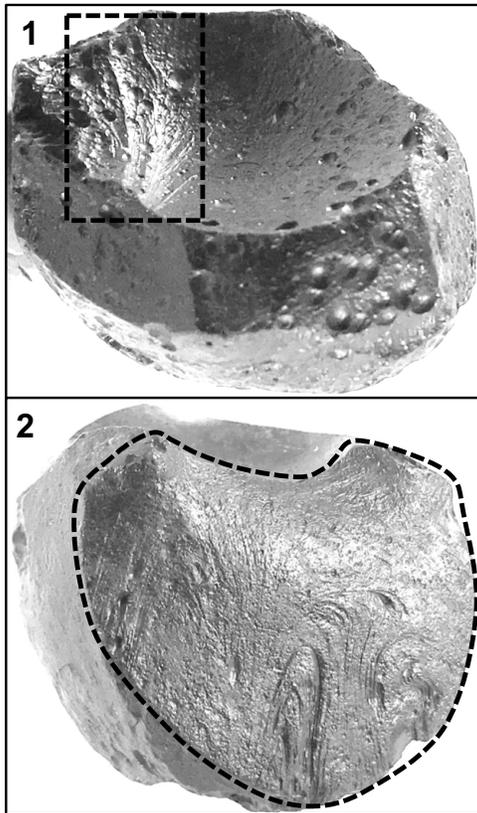


**Introduction:** Indochinite Australasian tektites (AAT) display contorted unit morphology consistent with electric charge saturation, arc-induced heating during magnetic confinement, and magnetic flux expansion with rapid cooling. Common surface textures are consistent with post-solidus flash heating and coincident electromagnetic (EM) field imprinting. Common co-expression of these Indochinite ‘fragment-form’ tektite features is consistent with disruption by high voltage (HV) arcing in vacuum, requiring explanation.

**Fragment-Form Evidence:** Two ~3cm-scale spheroid fragment-forms show apparent HV arcing imprints.



*Top (1):* arcing melt track across left portion of the concave surface with radiating filaments. *Bottom (2):* apparent surface layer EM field line striae imprinted by HV arcing. Both imply initially solid condition.

A proposed sequence fits the observations, with arcing timescales explaining rapid thermal cycling. Post-deposition differential etch is inconsistent with AAT splash form melt homogeneity. The indicated KE scale is similar to that of uniquely high test-derived and triple-verified AAT reentry speeds of 80% or more of Earth escape speed per NASA and Chapman et al. (1964) [1] as well as the uniquely broad AAT strewn coverage.

These multiple indications of ‘extinction-level’ KE scale are also considered for further AAT event insight.

**Lab Evidence Extended:** Kurosawa et al. (2012, 2015) [2, 3] explain *the role of the electron* in shock partitioning. *Elevated H<sub>2</sub>O* is suggested per Watt et al. (2011) [4]. H<sub>2</sub>O ionization and non-equilibrium shock processes discussed by Skryl et al. (2007) and Khantuleva (2003) [5,6] respectively, explain induced electrical current from strong shock, as correlation-length reduces to the order of H<sub>2</sub>O molecular dimension. An inductive-capacitive ‘LC’ circuit model provides an approximation; with extended period  $\tau \propto \sqrt{L * C}$ , planetary-scale inductive and capacitive reactance are indicated by  $\tau$  on the order of tektite melt cooling time.

**EM Alteration Sequence:** The setting is H<sub>2</sub>O component plasma and high induced electric field from shocked ice. Left column (pg. 2) images show radiant flux stripping silicate ions (1) which stream away as a conductive path in the surrounding high potential electric field, leading to high-voltage arcing through the tektite (2). Arc-induced heating adds ions, lowering conductive impedance, increasing current and heating, and fracturing the solid tektite shell (3). Current-induced magnetic field compresses the body-charged tektite (4), trapping fragments during energetic plasma venting erosion (5). Right column shows a compressed discoid fragment (1 & 2) with bulged plastic core A, plasma-eroded facets B and dissimilar exterior and fracture surfaces C. Hollow spheroid fragment (3) shows radial striae on surface A. Truncated spheroid (4) shows raised-rim deposition point A, plasma erosion facet B, fracture plane C and exterior pitting D. Frames (5) and (6) show ‘extruded’ hollow tektite fragments, with arrow showing extension direction. Scale cube is 1 cm.

**Conclusions:** EM involvement in post-solidus AAT disruption and thermal alteration is indicated by indochinite fragment-form specimens. Convex surface pitting and pock marks are consistent with post-solidus particle or spatter bombardment during thermal cycling in vacuum. Extensive target mass H<sub>2</sub>O ice is indicated, perhaps from large projectile or expanded oblique impact footprint and associated multiple in-track hotspots.

**References:** [1] Chapman et al. (1964) *Gochimica et Cosmochimica Acta* Vol. 28 p. 841-880. [2] Kurosawa et al. (2012) *JGR*, 117 E04007. [3] Kurosawa et al. (2015) *JGR Planets* [4] Watt et al. (2011) *M&PS*, 46, Nr 7, 1025-1032 [5] Skryl et al (2007) *Physical Review B* 76, 064107 [6] T.A. Khantuleva (2003) in *High-Pressure Shock compression of Solids VI*, Springer.

