

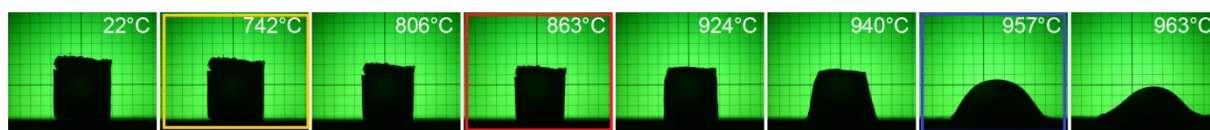
## SUPPLEMENTARY INFORMATION

### Novel copper borate ceramics with lithium-based sintering aids for LTCC terahertz applications

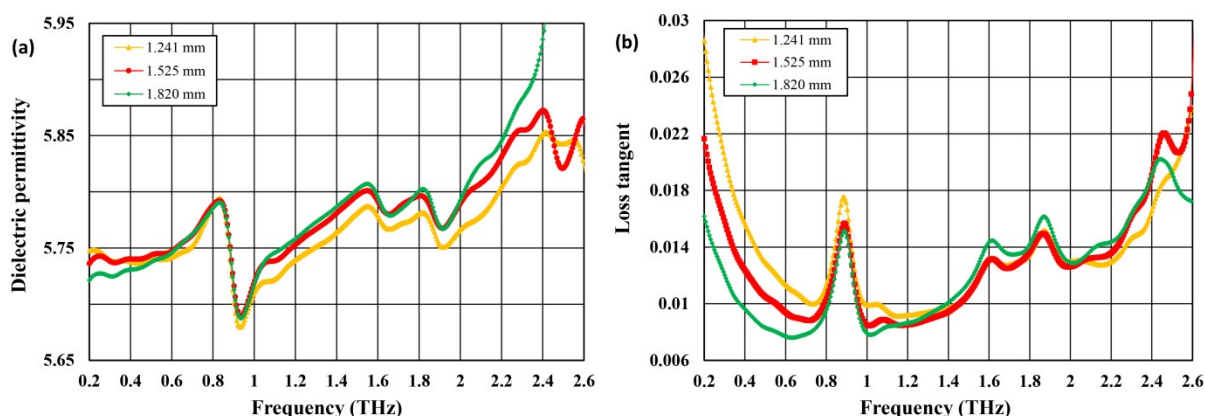
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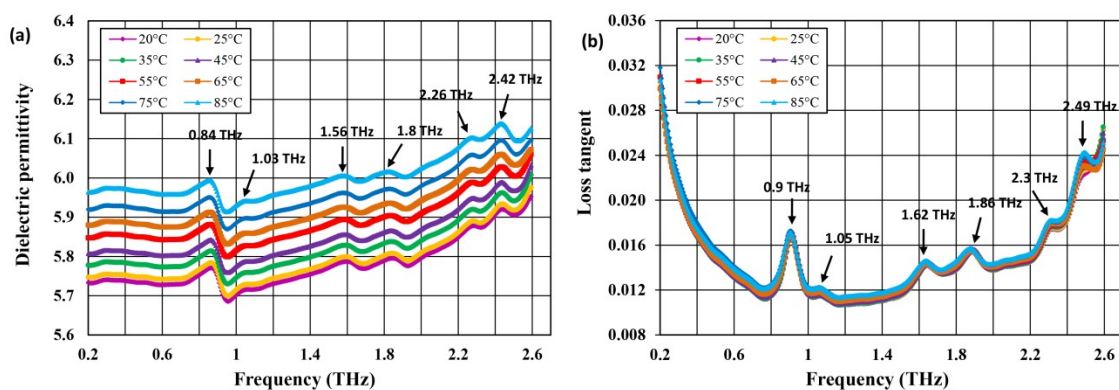
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**Fig. S1** Fig. 1 Selected hot-stage microscope images taken during heating in the temperature range 22-963°C for 75% CuB<sub>2</sub>O<sub>4</sub> - 25% Cu<sub>3</sub>B<sub>2</sub>O<sub>6</sub> ceramics doped with 5mol% Li<sub>2</sub>WO<sub>4</sub>. The characteristic temperatures are marked by the coloured frames – temperature of the start of shrinking (yellow), optimal sintering temperature (red), melting temperature (blue).



**Fig. S2** Frequency dependence in the 0.2-2.6THz range for the dielectric permittivity (a) and loss tangent (b) for 75wt% CuB<sub>2</sub>O<sub>4</sub> – 25wt% Cu<sub>3</sub>B<sub>2</sub>O<sub>6</sub> ceramics doped with 5.7mol% LiBO<sub>2</sub> with different thicknesses



**Fig. S3** Frequency dependence in the 0.2-2.6 THz range for the dielectric permittivity (a) and loss tangent (b) for 75% CuB<sub>2</sub>O<sub>4</sub> - 25% Cu<sub>3</sub>B<sub>2</sub>O<sub>6</sub> ceramics doped with 5mol% Li<sub>2</sub>WO<sub>4</sub> at various temperatures in the 20-85°C range