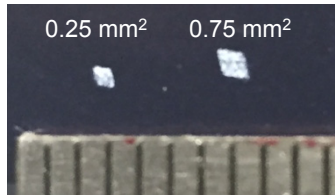


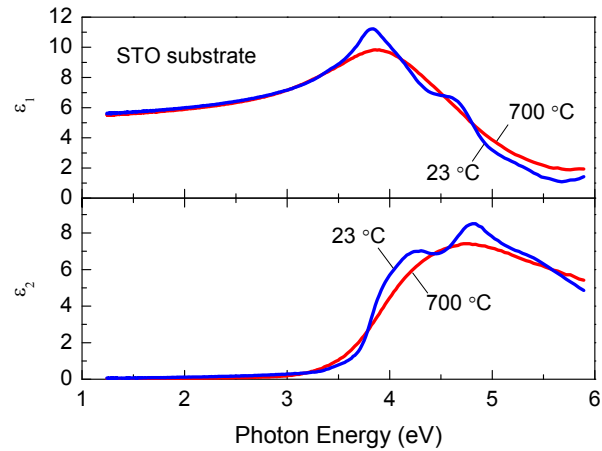
## SUPPLEMENTARY MATERIAL

### Selective growth of epitaxial $\text{Sr}_2\text{IrO}_4$ by controlling plume dimensions in pulsed laser deposition

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**FIG. S1** A photograph of focused laser beam spot images when plumes of different sizes are generated, as shown in Fig. 1 (b1) and Fig. 1 (c1), respectively.



**FIG. S2** *In-situ* dielectric functions of real ( $\epsilon_1$ ) and imaginary ( $\epsilon_2$ ) parts of a STO substrate at 700 °C (red curves) and room temperature (blue curves).