

## Supporting information

### Electric-field-induced non-ergodic relaxor to ferroelectric transition in $\text{BiFeO}_3\text{-}x\text{SrTiO}_3$ ceramics

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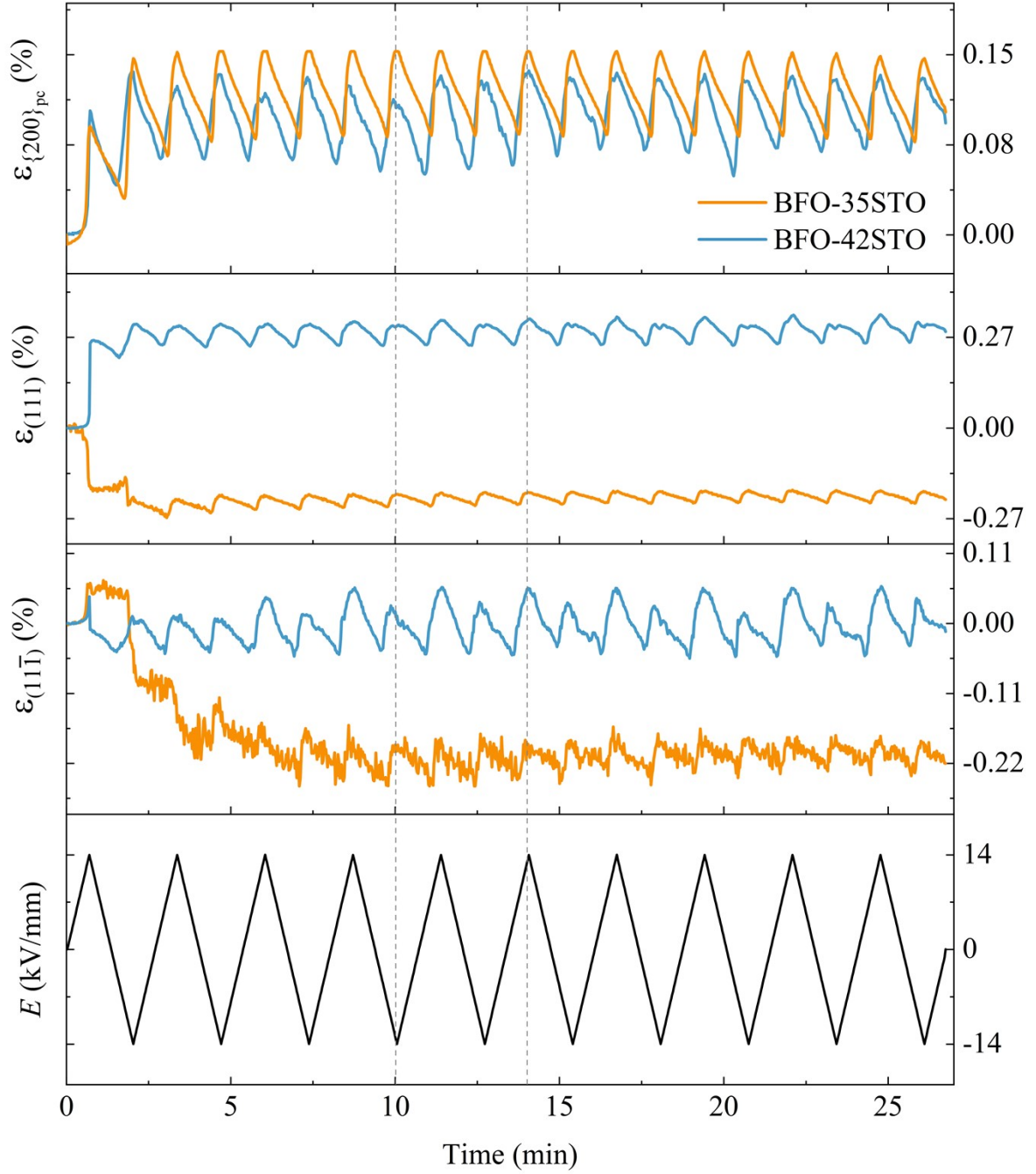
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### Content

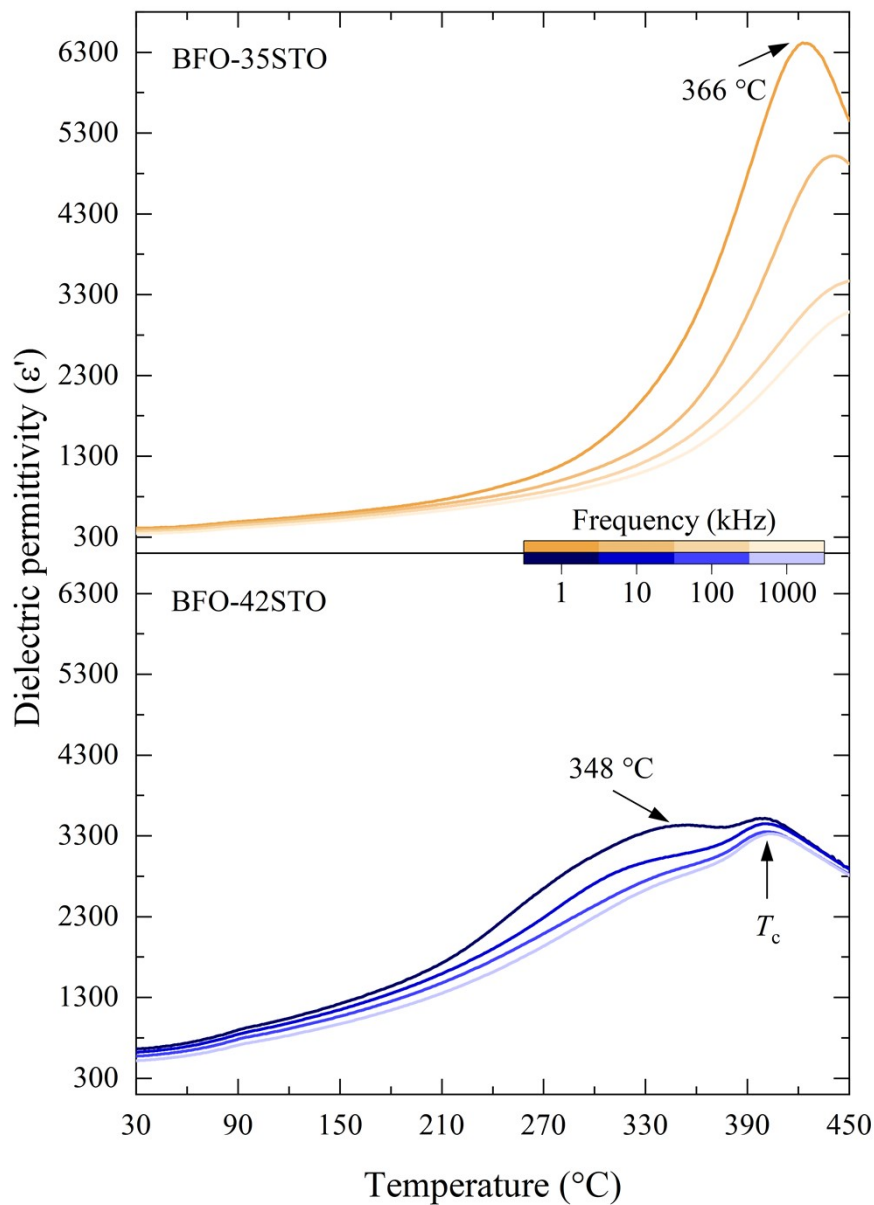
$\varepsilon(E,t)$ dependency .....	S2
Dielectric permittivity .....	S3

$\varepsilon(E,t)$  dependency



**Figure S1.** Comprehensive time and  $E$ -field evolution of  $\varepsilon_{\{111\}_{pc}}$  and  $\varepsilon_{\{200\}_{pc}}$  for the entire field cycling. The  $\varepsilon(E,t)$  dependency shows a general behavior for times higher than the initial wake-up cycle. This trend is exemplified from the dashed lines at 10 min and 14 min. One may conclude that  $\varepsilon_{\{200\}_{pc}} > \varepsilon_{(111)} \approx \varepsilon_{(11\bar{1})}$  for BFO-35STO, while  $\varepsilon_{(111)} > \varepsilon_{\{200\}_{pc}} > \varepsilon_{(11\bar{1})}$  for BFO-42STO.

## Dielectric permittivity



**Figure S2.** Temperature dependent dielectric permittivity for BFO-35STO and BFO-42STO at selected frequencies. The frequency dependent peak is characteristic of the relaxor behavior. The arrows at 1Hz illustrate the peak shift towards lower temperatures, indicative of the increased ergodicity in BFO-42STO sample. Increasing the STO fraction the Curie temperature ( $T_c$ ) is shifted to 401 °C, as seen by the frequency independent peak in BFO-42STO.