Electronic Supplementary Material (ESI) for Nanoscale.

Electron-Beam Writing of Relaxor Ferroelectric Polymer for Multiplexing Information Storage and Encryption

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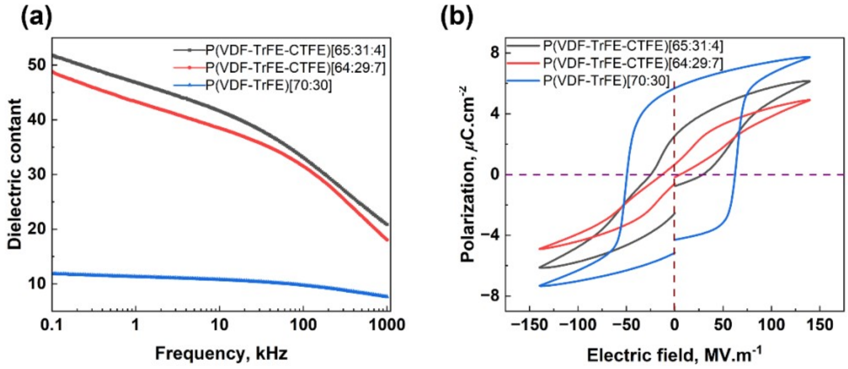

Figure S1. (a) Room temperature dielectric constant dependence on the frequency; (b) Ferroelectric bipolarization hysteresis of P(VDF-TrFE-CTFE)[65:31:4]、P(VDF-TrFE-CTFE)[64:29:7] and P(VDF-TrFE)[70:30].

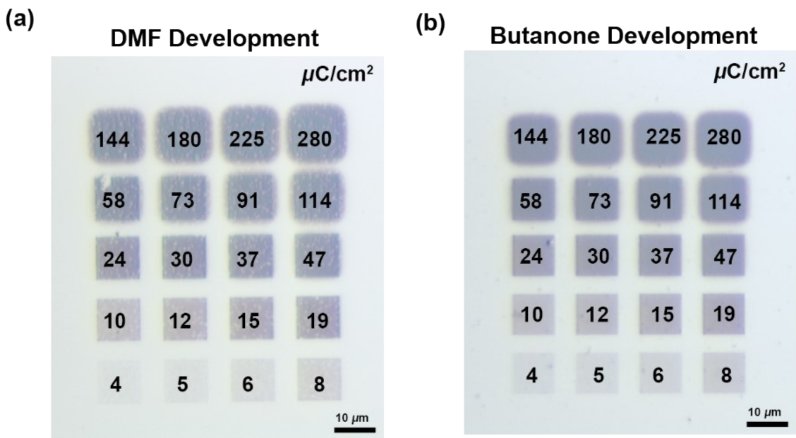

Figure S2. Optical microscope image of ferroelectric patterns that were developed with (a) DMF and (b) butanone.

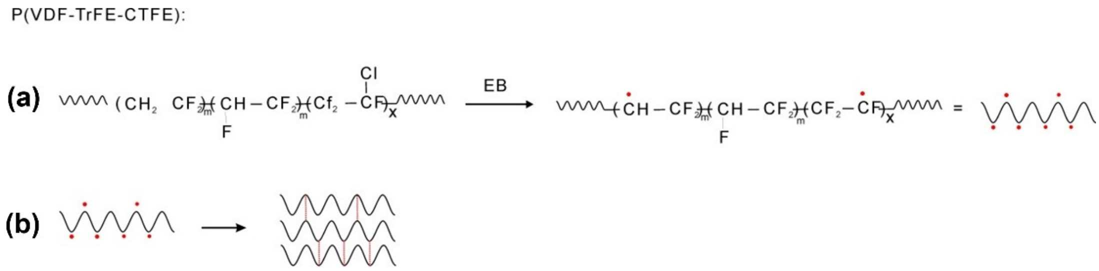

Figure S3. The mechanism of P(VDF-TrFE-CTFE) under EB irradiation.

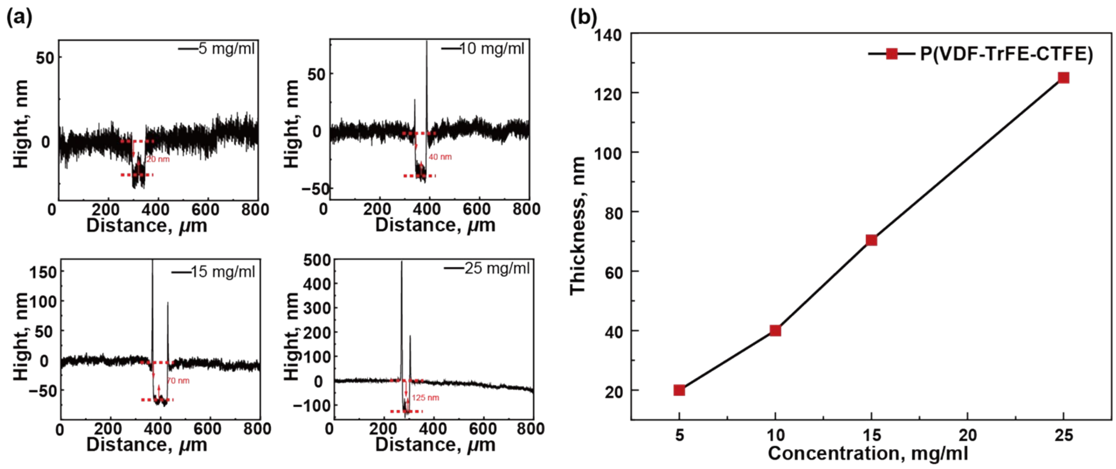

Figure S4. (a) Step profiler testing of the film with four concentrations of P(VDF-TrFE-CTFE) solution. (b) The thickness vs concentration curve of P(VDF-TrFE-CTFE) film.

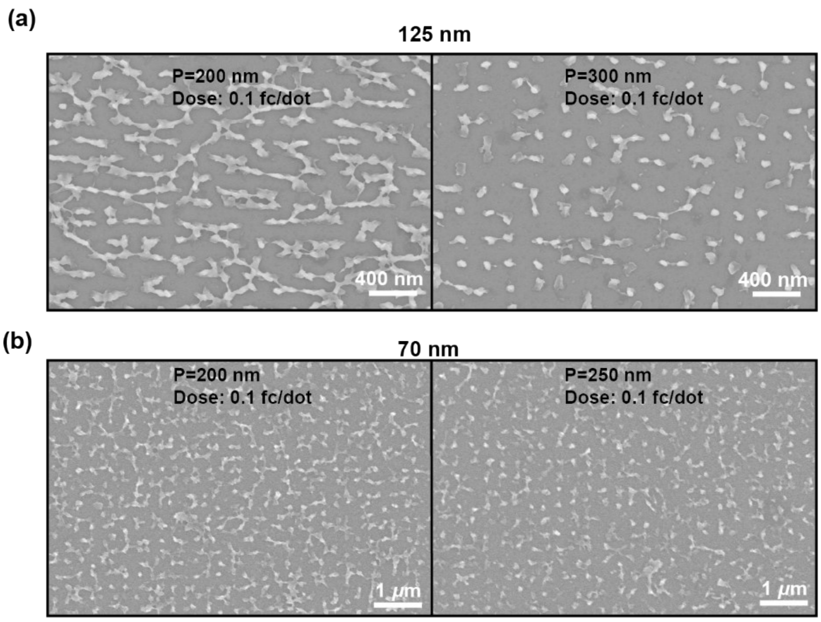

Figure S5. SEM images of dense dot arrays written by controlling various period of 200, 250 and 300 nm at an exposure dose of 0.1fc/dot. The film thickness used is approximately (a) 125 nm, (b) 70 nm, respectively.

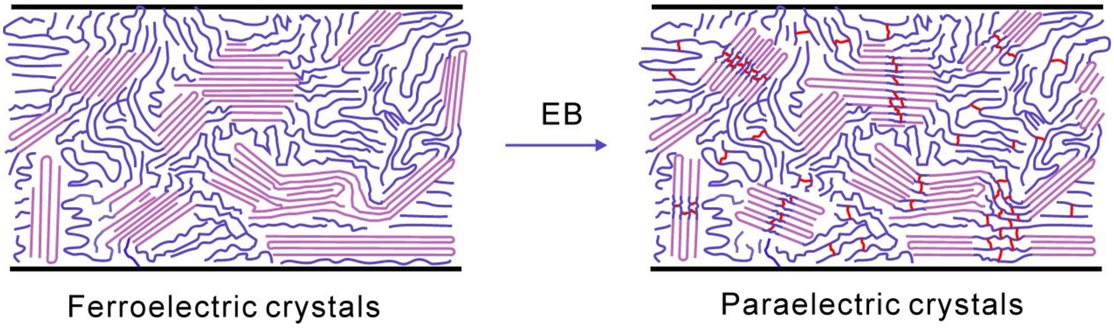

Figure S6. The schematic of transition from ferroelectric crystals to paraelectric crystals under EB irradiation.

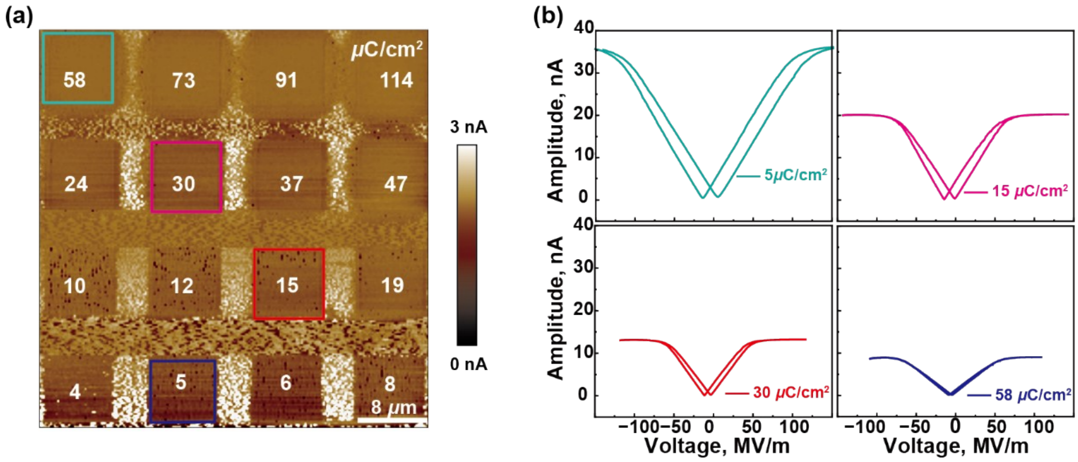

Figure S7. (a) PFM amplitude image of ferroelectric patterns with the square area of 8 μm * 8 μm at different exposure doses from 4 to 114 μC/cm^2. (b) PFM amplitude- electric field butterfly loops of P(VDF-TrFE-CTFE) patterns under the exposure doses of 5, 15, 30, and 58μC/cm^2.

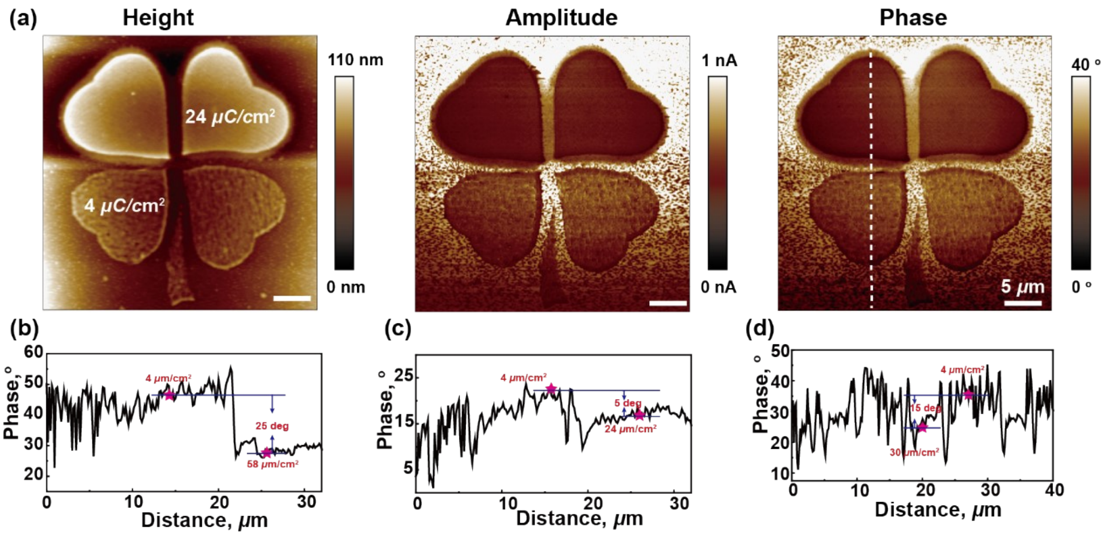

Figure S8. (a) Topography, PFM amplitude, PFM phase imaging of irradiated P(VDF-TrFE-

CTFE) pattern encrypted by two dosed of 4 and 24 μC/cm^2.

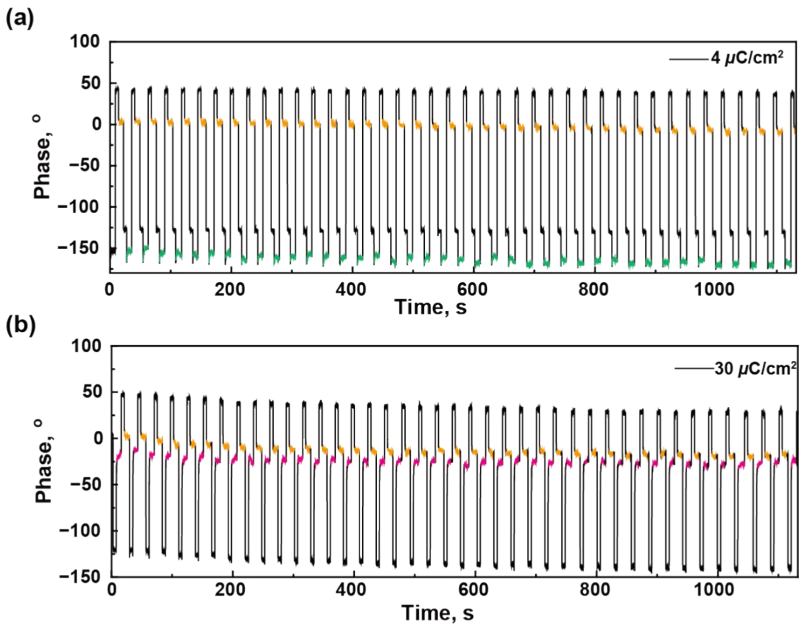

Figure S9. Data storage stability of writing and reading of ferroelectric dots irradiated at the dose of (a) 4 and (b) 30 μC/cm^2.