

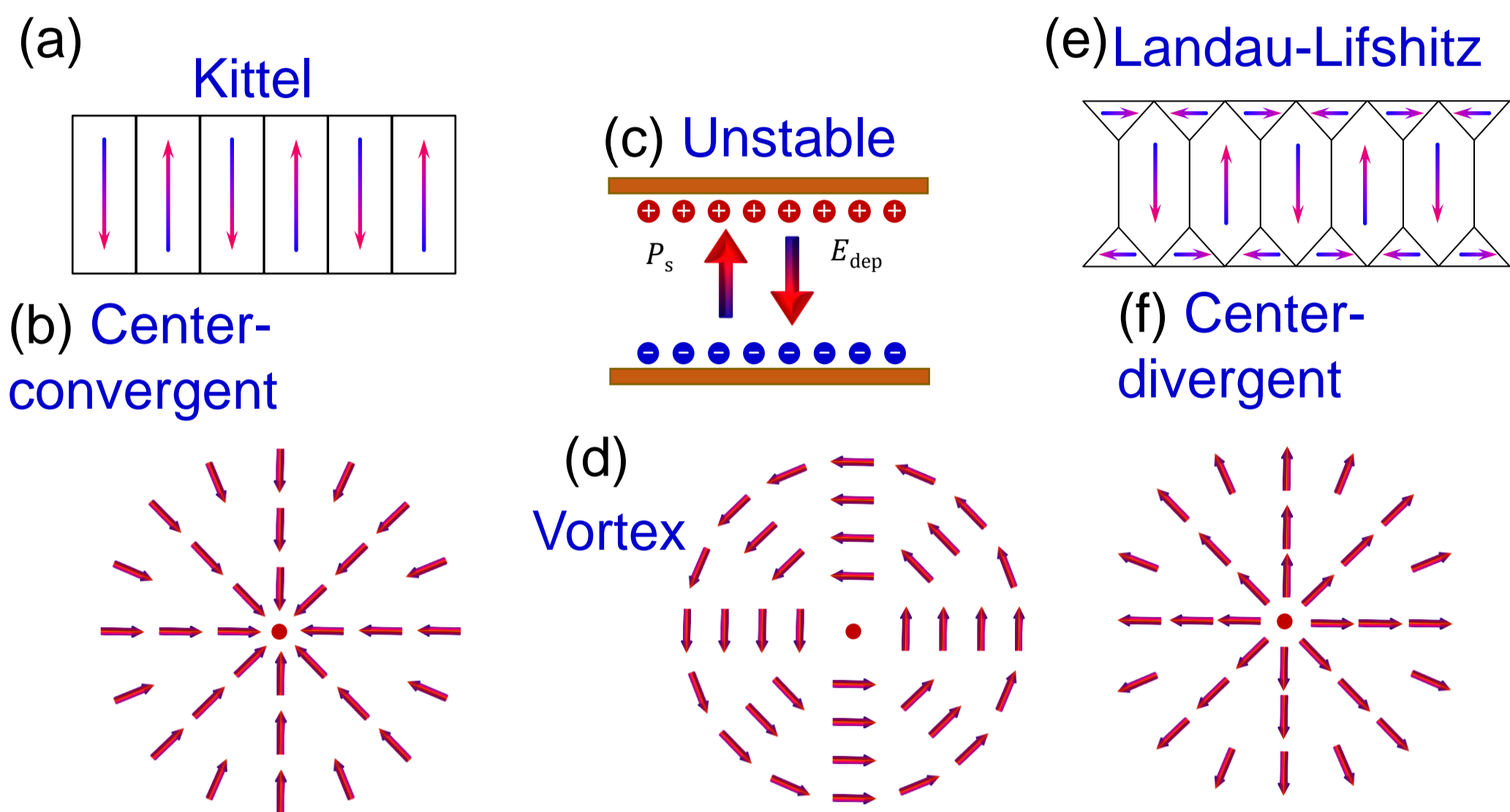
Unusual center domains in BiFeO₃ nanodots

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Introduction

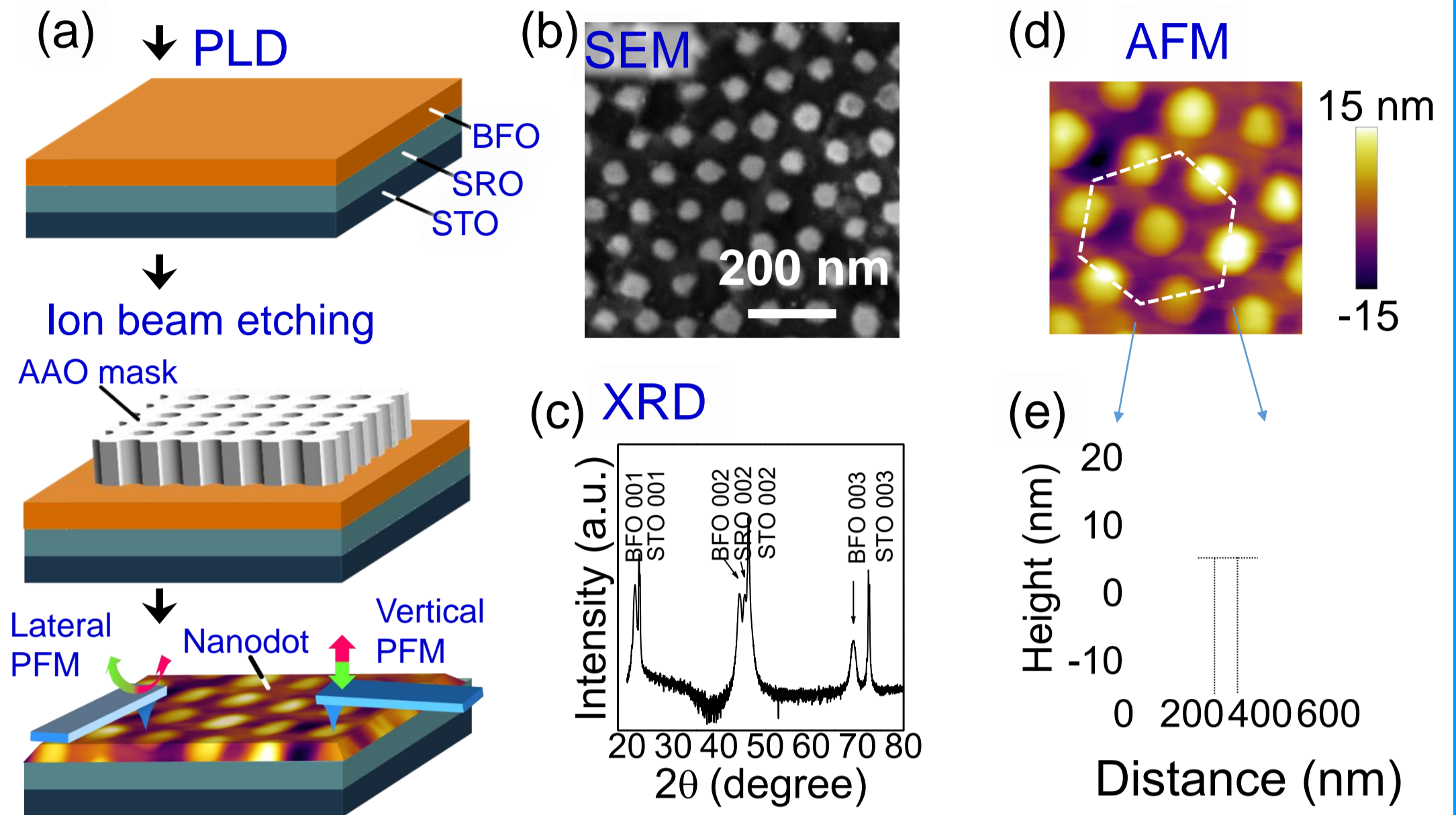
Topological defects in surface states



Interesting point: obtain exotic topological states.

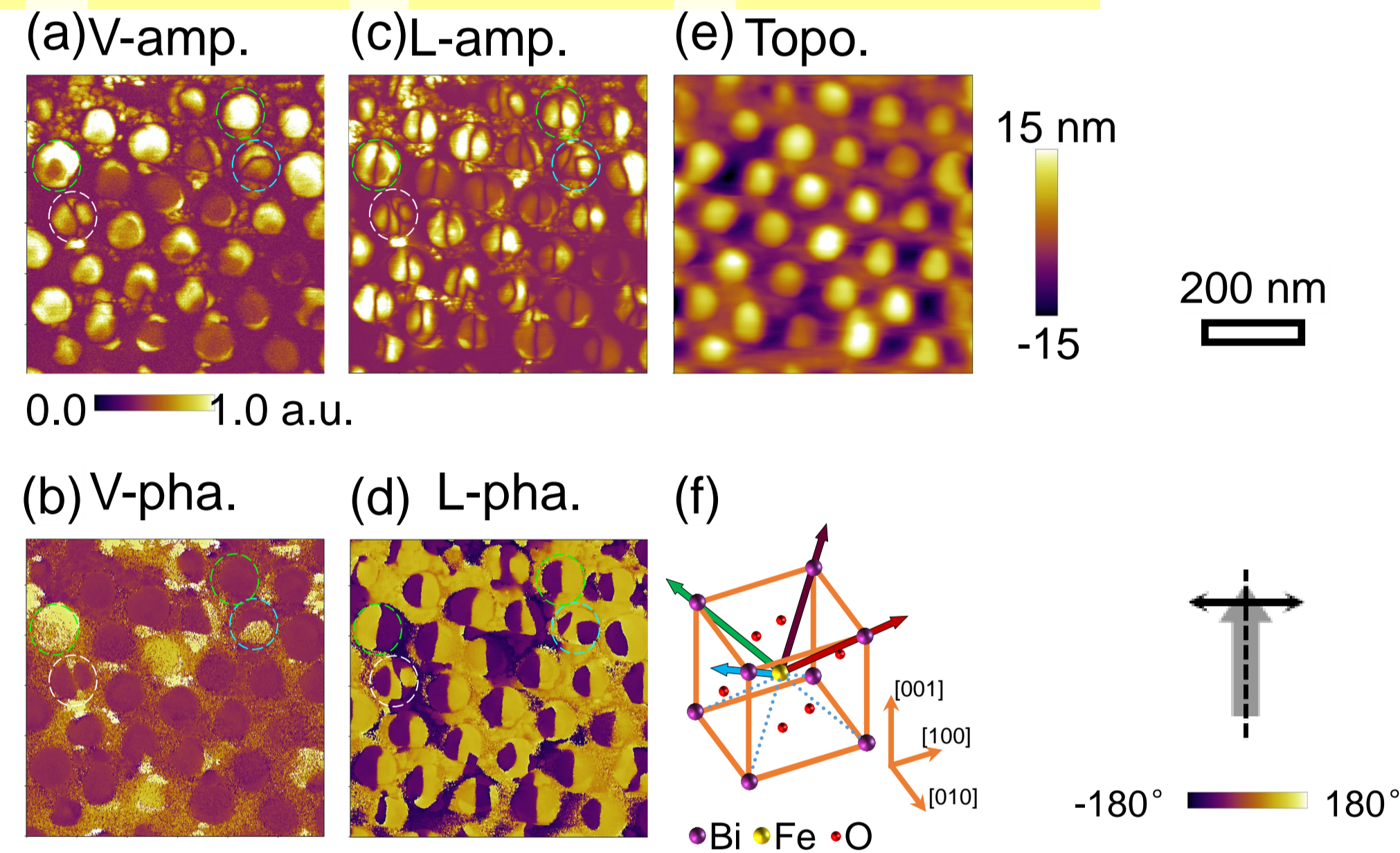
Materials and methods

Fabrication and structure of BFO nanodot arrays



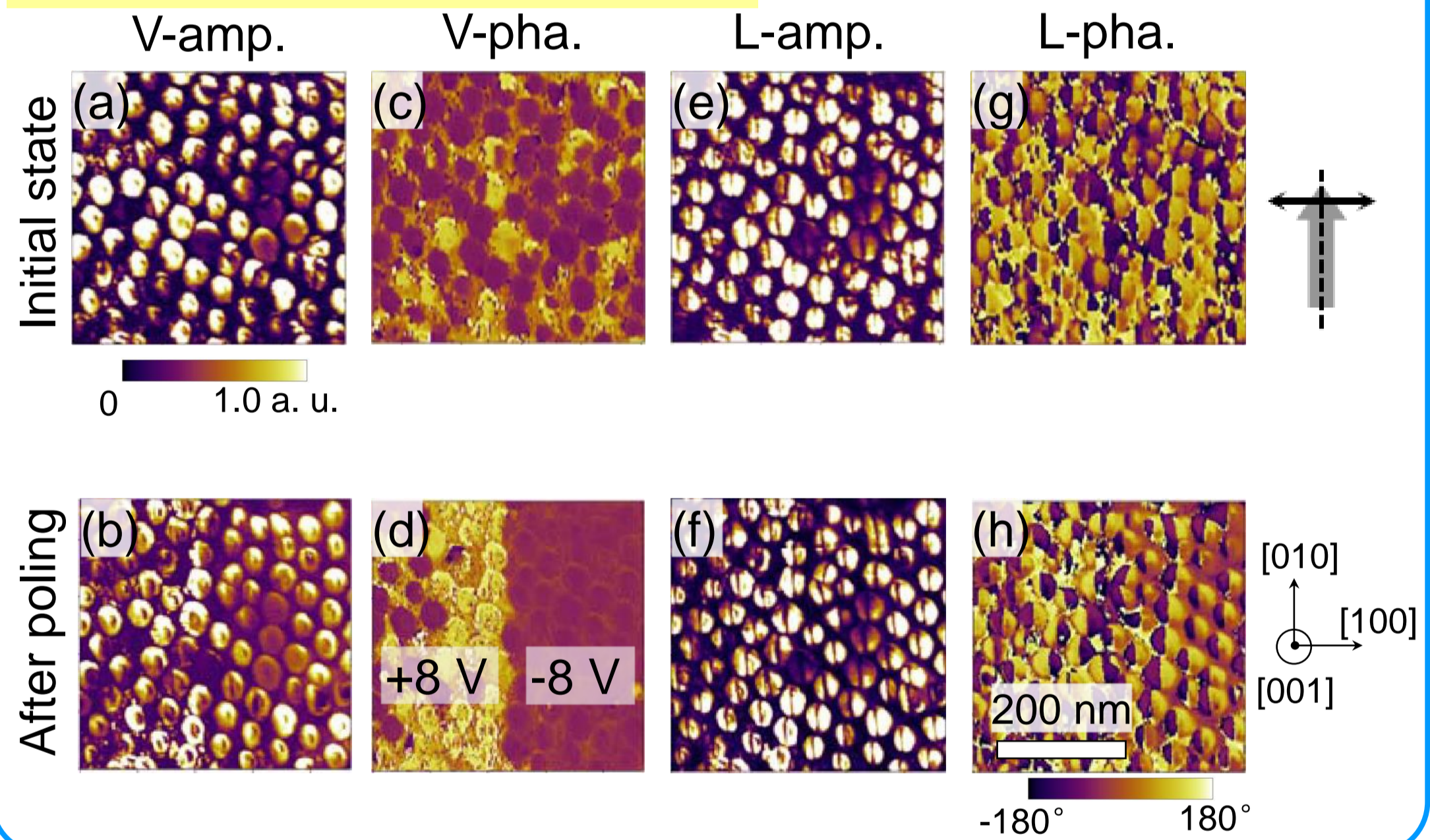
Results

PFM images for a BFO nanodot array



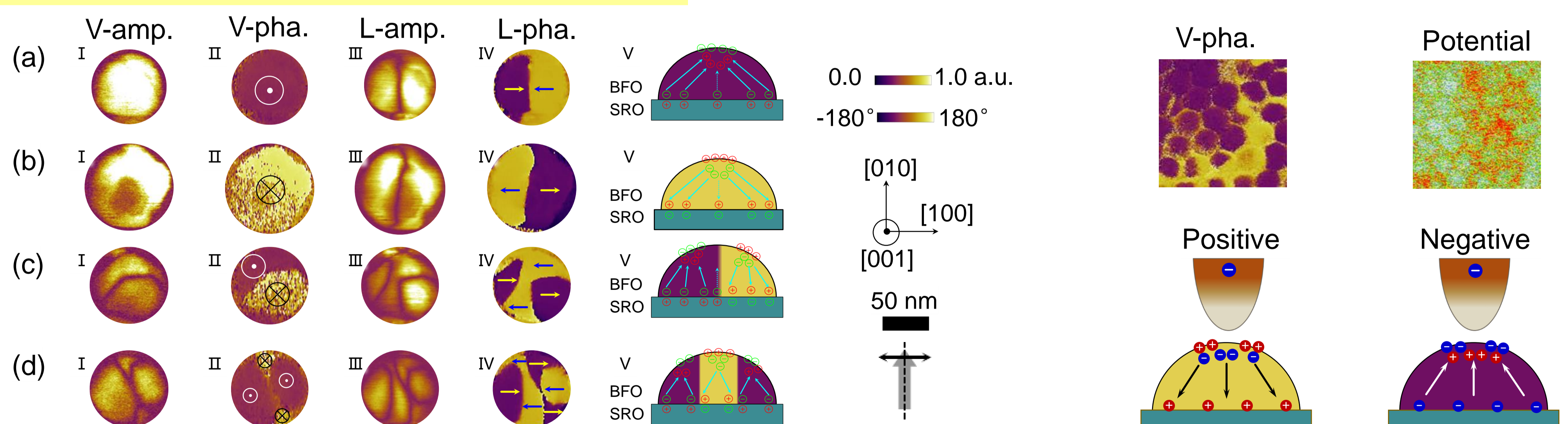
Results

PFM images after poling



Discussion

Typical center domains in the nanodots



Summary

Our studies of domain structure in nanodot arrays by vector PFM identify double center domains and triple center domains. These center domains can be reversibly switched under the electric field produce by the biased PFM tip, and their stability can be maintained by compensating the polarization charge with the accumulated charge. These stable topological domain state in the discrete nanodots provide an opportunity to further study their new properties in high-density memory devices.

