

Integrating magnetic Co-nanopillars in NbN-based VAN thin films as a multifunctional hybrid metamaterial

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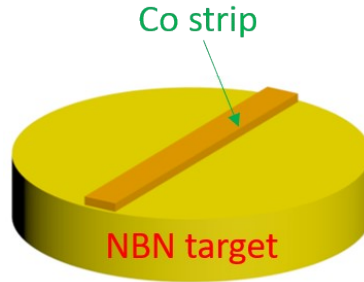


Fig.S1 Target for NbN and Co deposition.

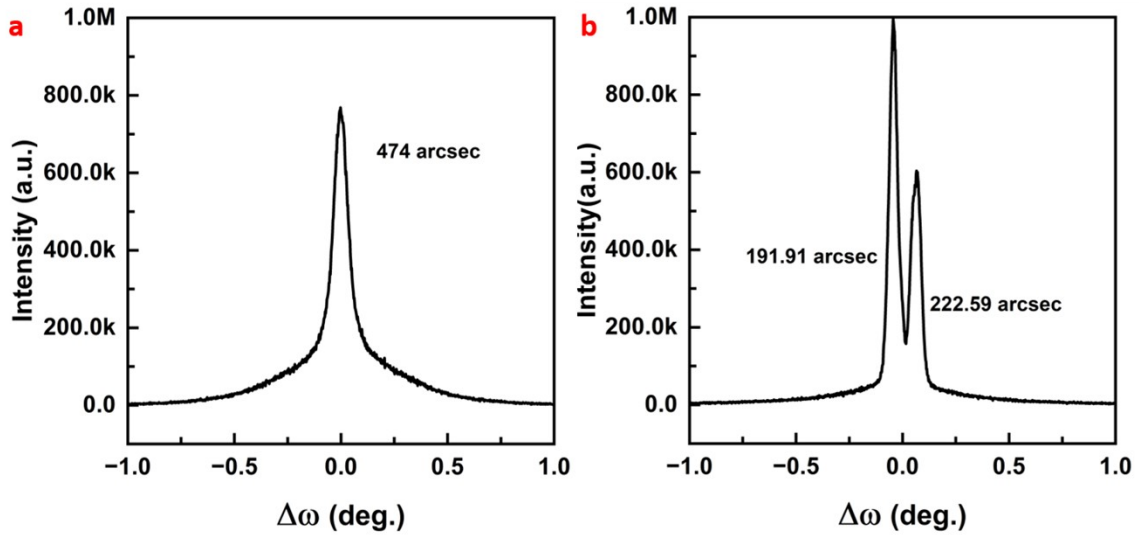


Fig.S2 Rocking curve of (a) pure NbN and (b) NbN-Co nanocomposite thin films.

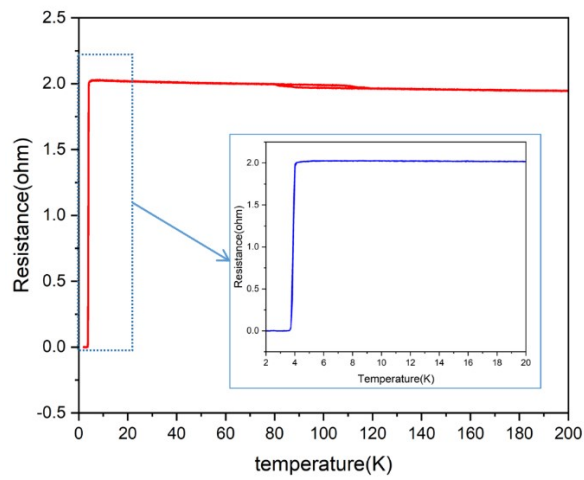


Fig.S3 RT measurement of pure NbN thin film, and it shows superconductivity with the transition temperature at 4K.

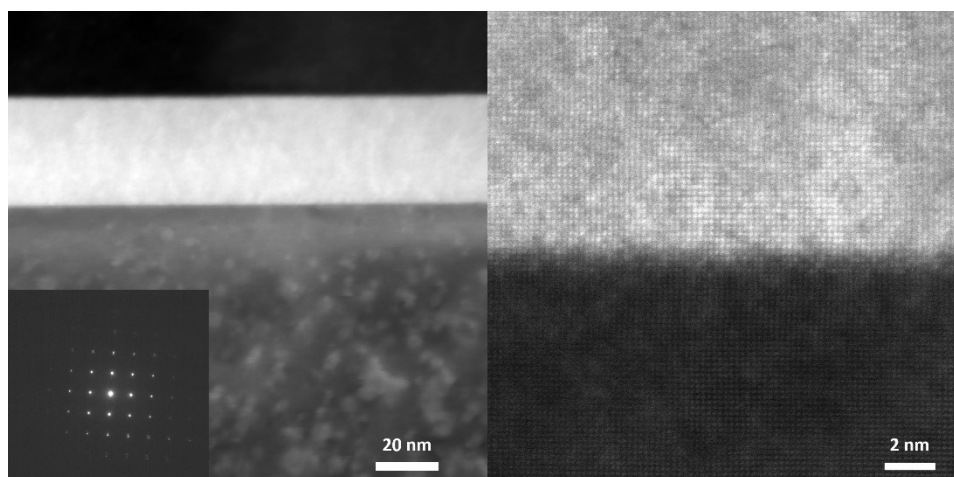


Fig.S4 STEM and diffraction pattern of pure NbN on MgO. It shows cube-on-cube epitaxial interface.

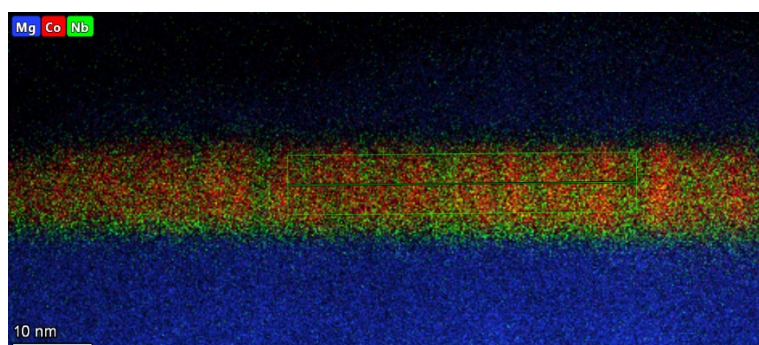


Fig.S5 EDS mapping of cross-sectional of NbN-Co thin film with a wide Co strip.

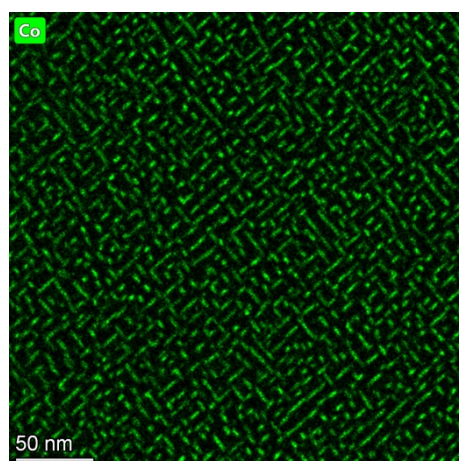


Fig.S6 Low mag Co EDS mapping image.

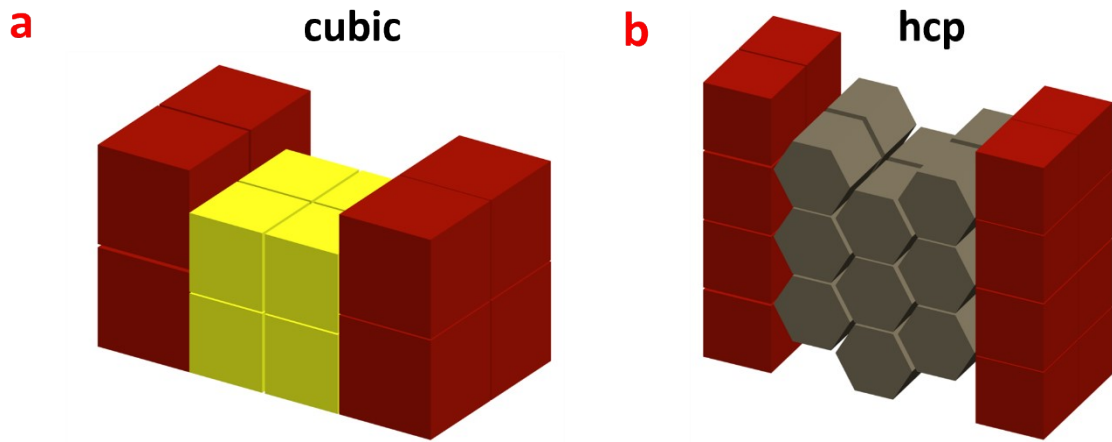


Fig.S7 Schematic drawing of cubic and hcp Co embedded inside NbN matrix.

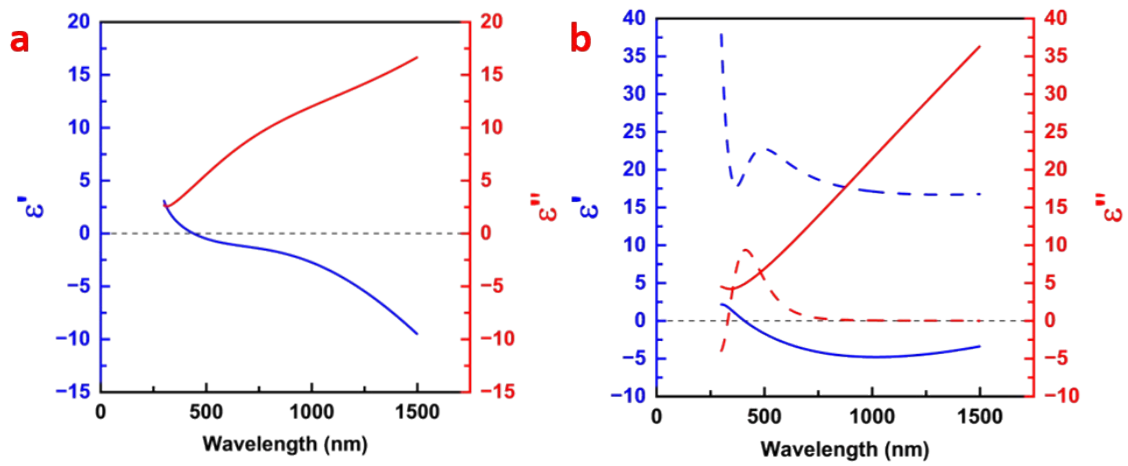


Fig. S8 The optical permittivity data fitted from the RC2 ellipsometry measurements from (a) pure NbN and (b) NbN-Co nanocomposite. In the (b) part, the solid line is in-plane direction, and the dashed line is out-of-plane direction.