Electronic Supplementary Material (ESI) for Nanoscale.

Self-assembled HfO_2-Au nanocomposites with ultra-fine vertically aligned Au nanopillars

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Supporting information

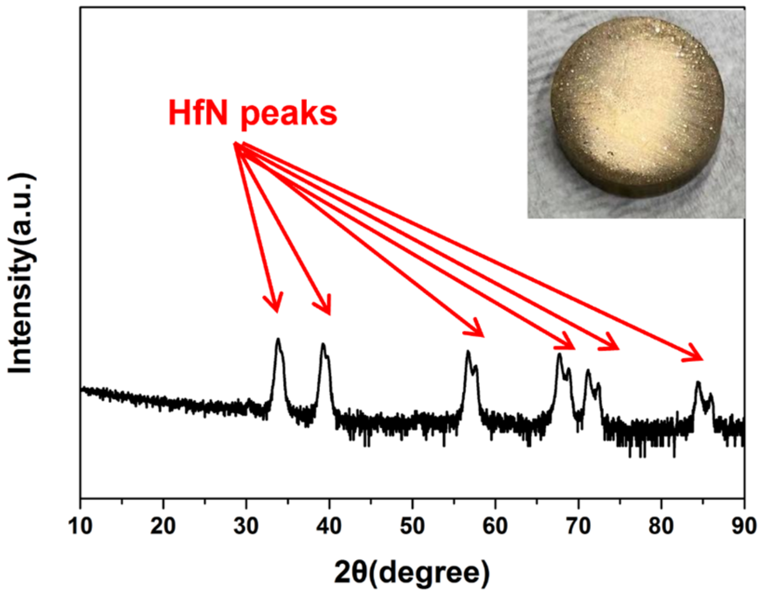

Figure S1 XRD results of HfN target used for PLD growth

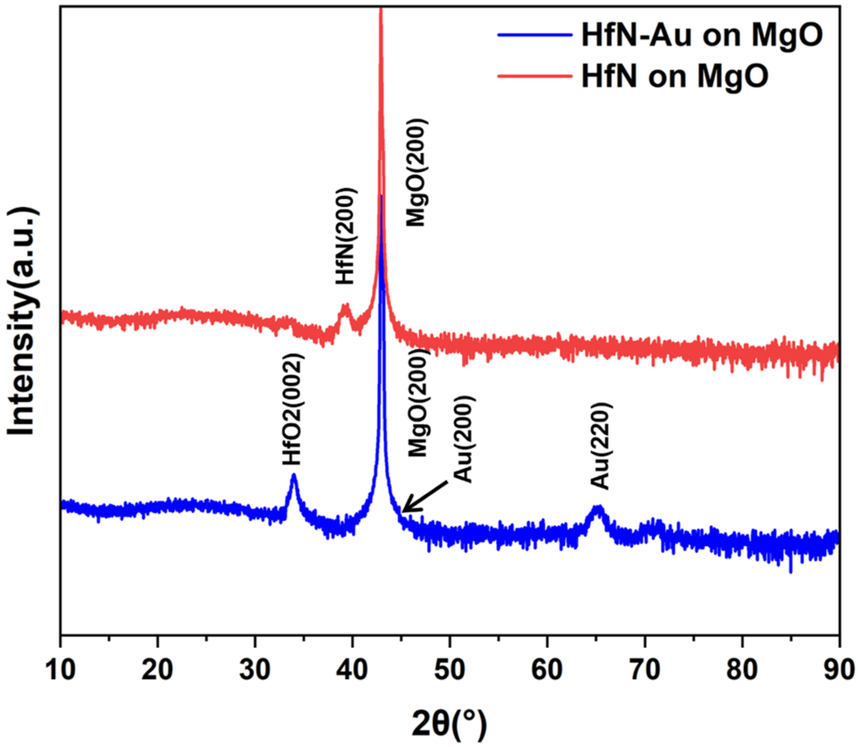

Figure S2 XRD θ-2θ pattern of HfN deposited on MgO with or without Au.

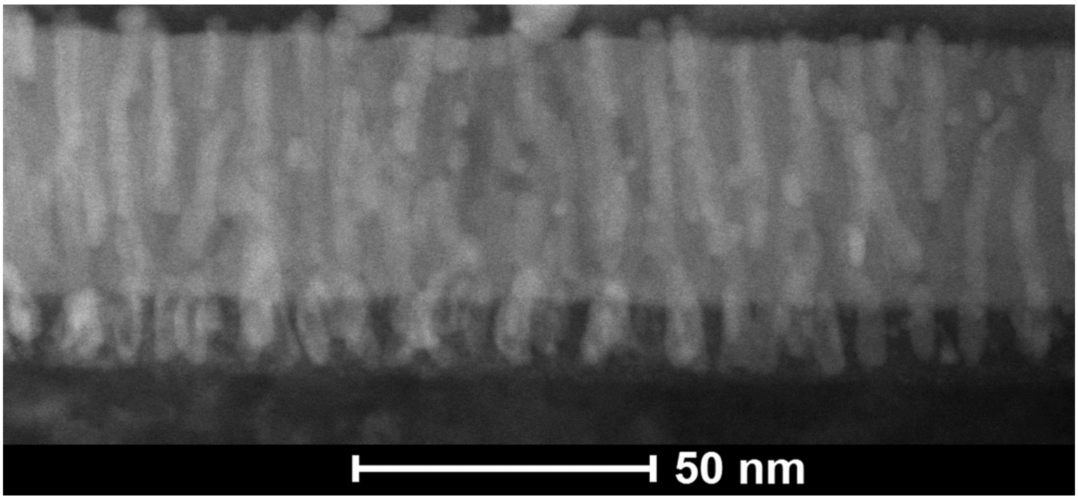

Figure S3 STEM cross-section images of HfO_2-Au thin film on STO (with buffer) with 10Hz frequency

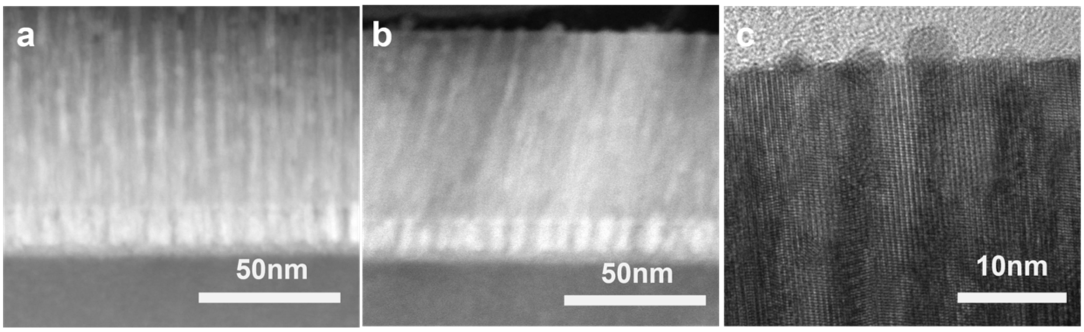

Figure S4 STEM cross-section images of HfO_2-Au thin film on STO (with buffer) with (a) HfN target and (b) HfO_2 target. (c) High resolution TEM image of HfO_2-Au thin film made by HfO_2 target.

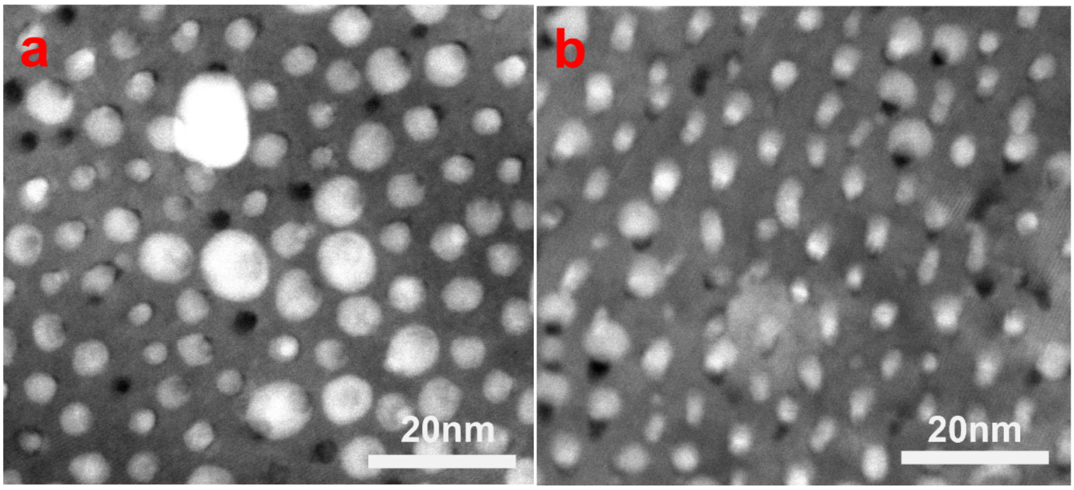

Figure S5 STEM Plan-view images of HfO_2-Au thin film on STO (with buffer) with (a) HfN target and (b) HfO_2 target.

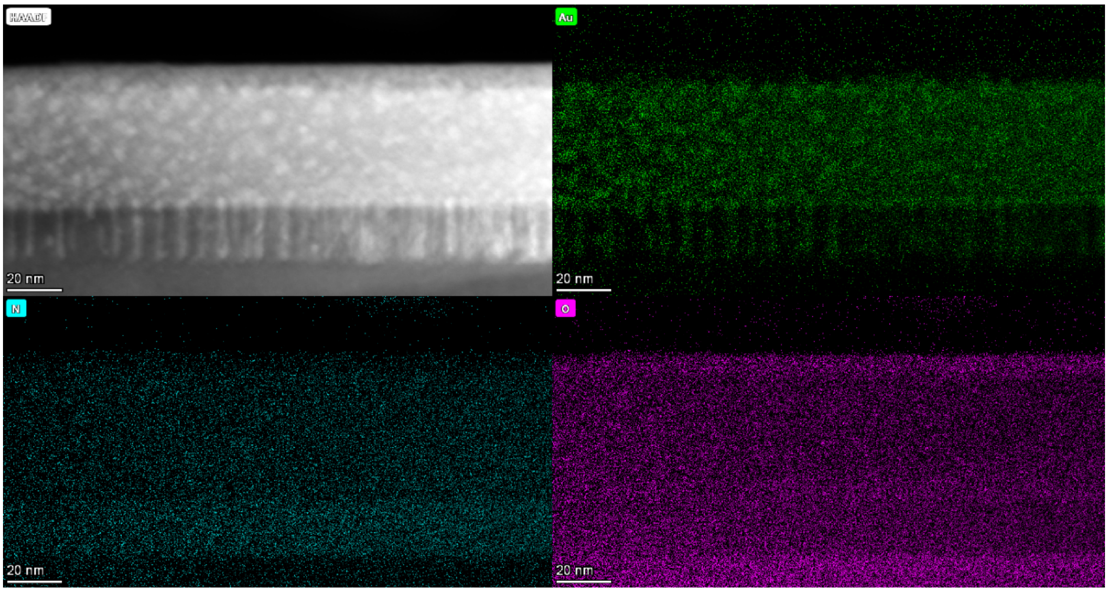

Figure S6 HAADF image and EDS elemental mapping of HfO_2-Au thin film on STO (with buffer) under room temperature

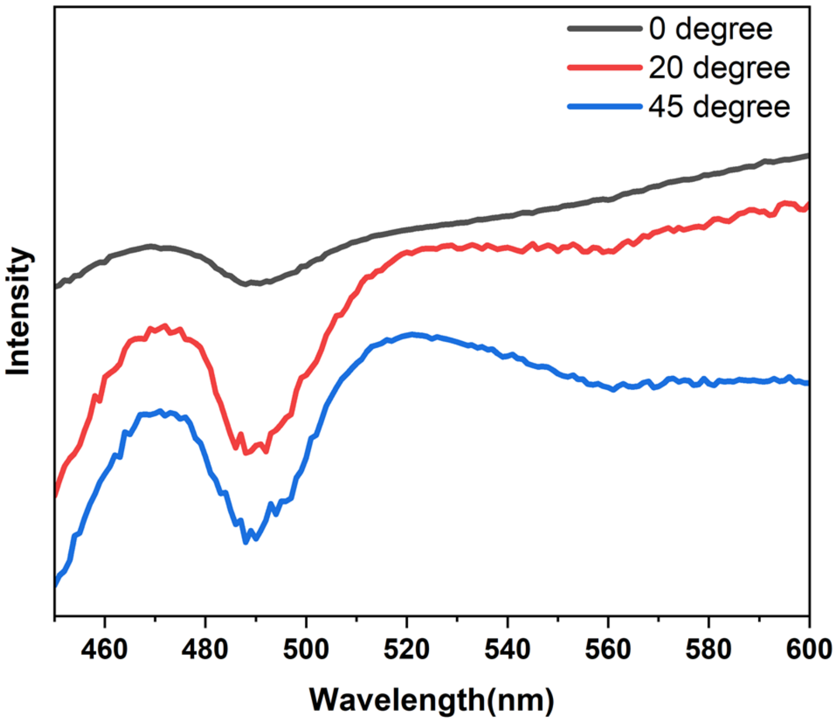

Figure S7 Transmittance of HfO_2-Au thin film on STO (with buffer) with different incident angle

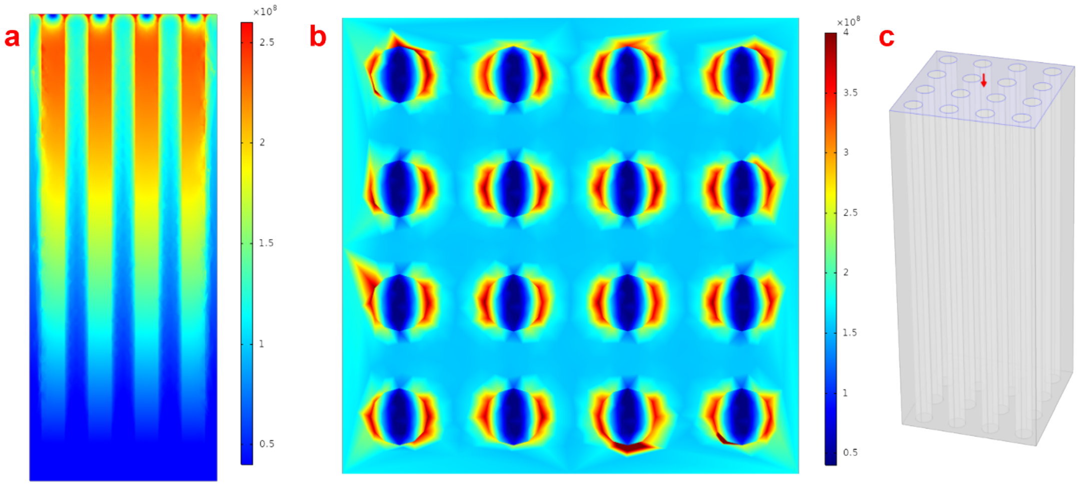

Figure S8 (a) Cross-section and (b) Plan-view of simulated electric field map under 480 nm incident light. (c) 3D model of simulation.