Supplementary materials

Matching experimental chemical composition configuration and theoretical model in $Nd_2Fe_{14}B$/α-Fe nanocomposites to improve coercivity

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SM-I: The amorphous $Nd_2Fe_{14}B$/α-Fe ribbons

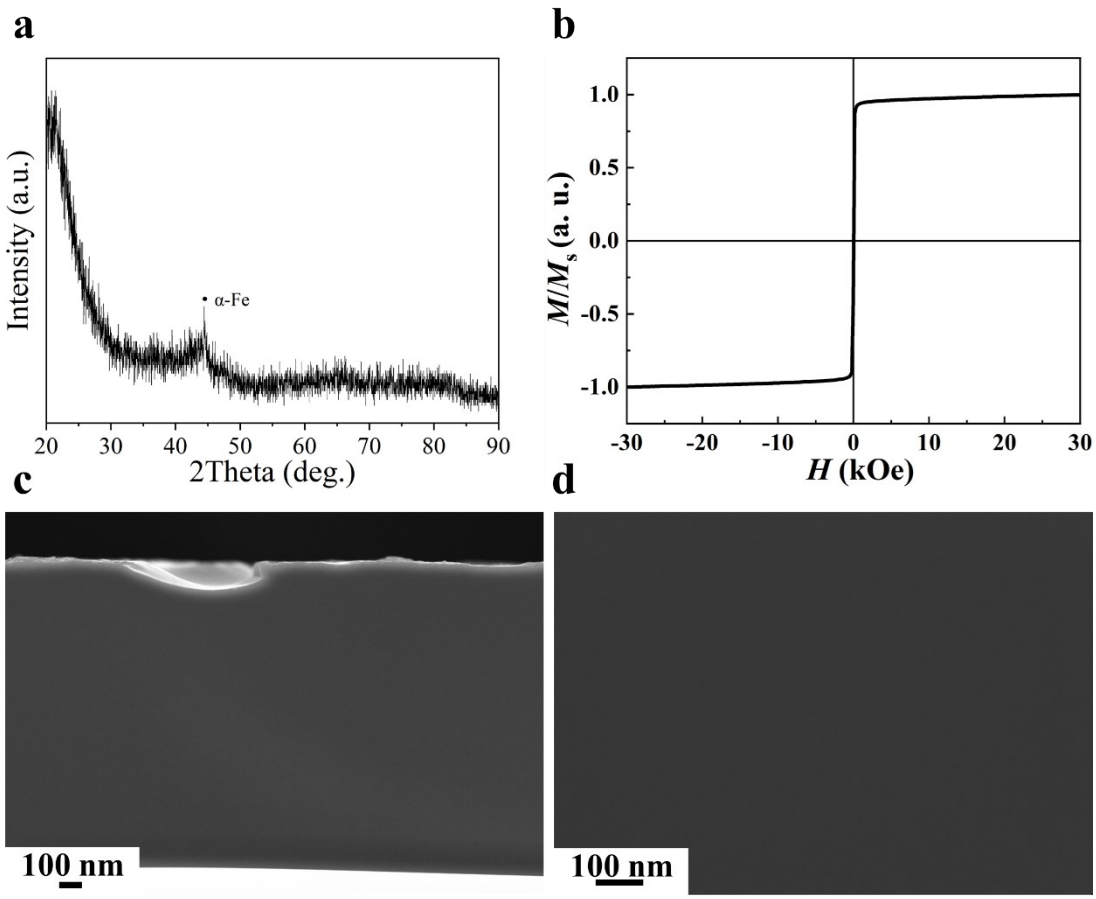

Fig. S1 The amorphous $Nd_2Fe_{14}B$/α-Fe ribbons. a: XRD pattern; b: hysteresis loops; c and d: SEM fracture morphology.

SM-II: Magnetic properties of the annealed amorphous ribbons

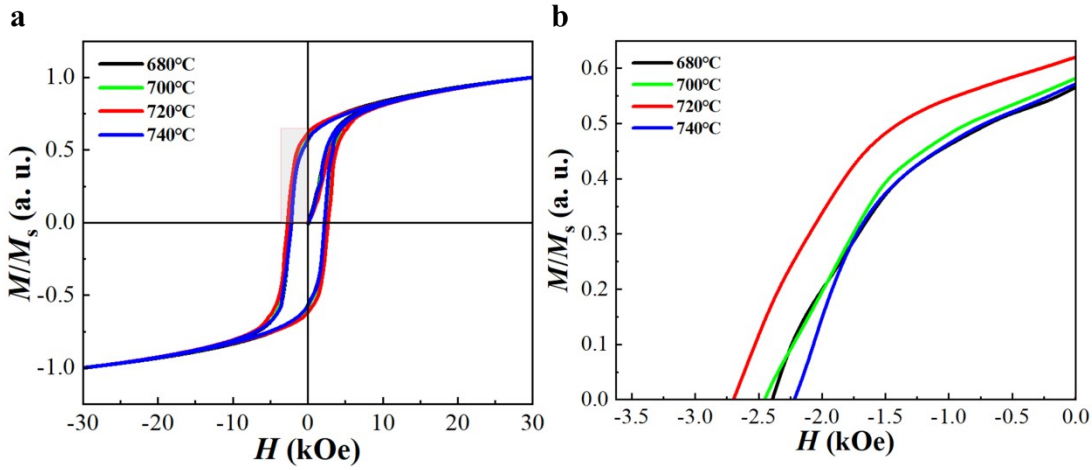

Fig. S2 Hysteresis loops (a) and demagnetization curves (b) of amorphous $Nd_2Fe_{14}B$/α-Fe ribbons annealed at different temperatures.

SM-III: Two typical ideal soft-hard composite models

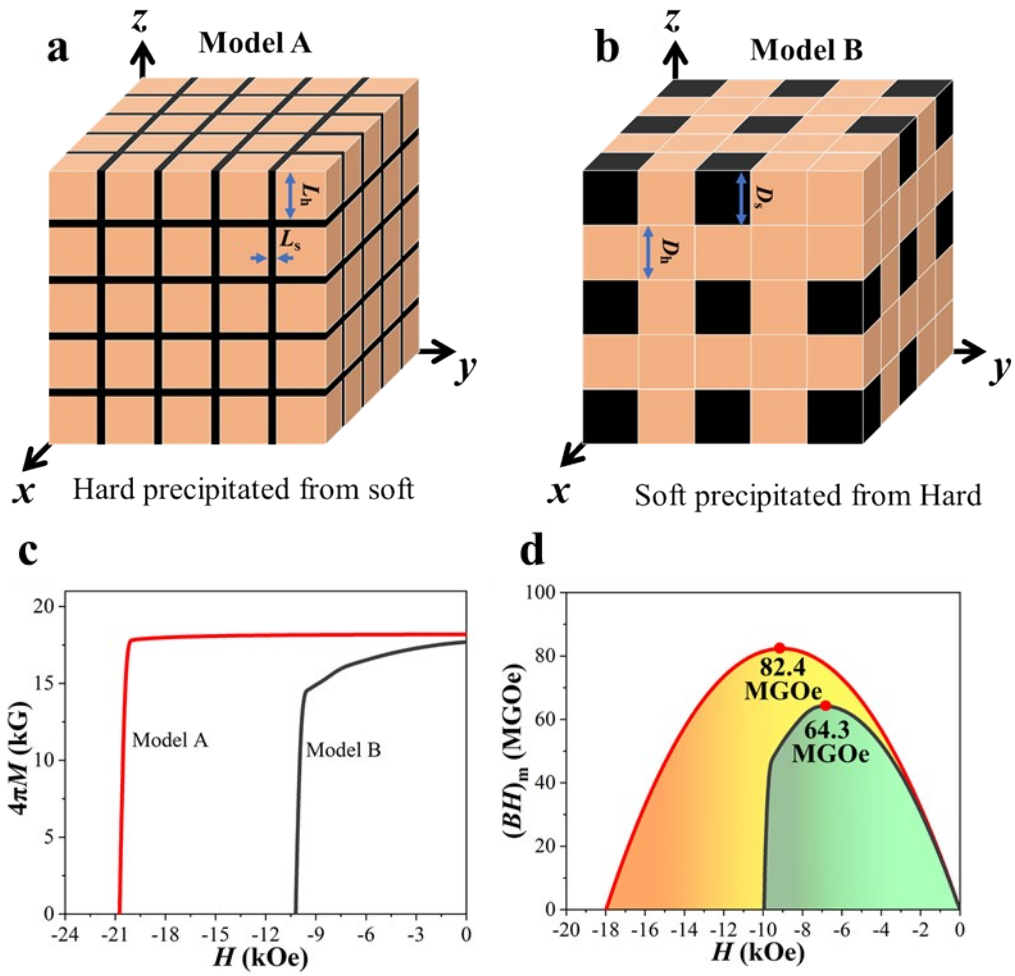

Fig. S3 Two typical soft hard composite models; a and b showing the diagrams of Model A and Model B, the hard phase precipitated on the soft phase matrix and the soft phase precipitated on the hard phase matrix respectively; c and d are demagnetization curves and magnetic energy product curves obtained from the two models, respectively.

SM-IV: SEM graphs of the Tips for 3DAP

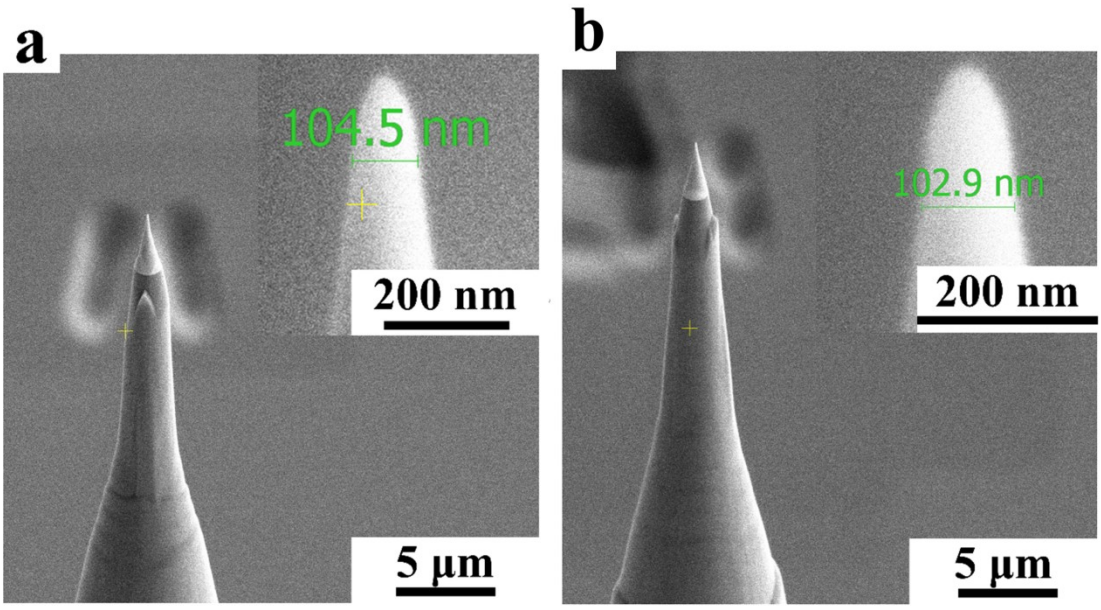

Fig. S4 The SEM graphs of the tips of Sample A (**a**) and Sample B (**b**).

SM-V: Video 1 for 3D structure of sample A.

SM-VI: Video 2 for 3D structure of sample B.