Electronic Supplementary Material (ESI) for Nanoscale.

Supporting Information

Discovery of a novel spin-polarized Nodal ring in two-dimensional HK lattice

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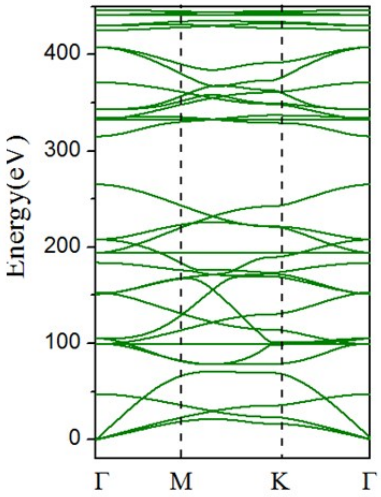

Fig. S1 Calculated phonon band dispersions of Mn-Cyanogen lattice. No appreciable imaginary phonon modes are observed, indicating that the Mn-Cyanogen lattice is kinetically stable.

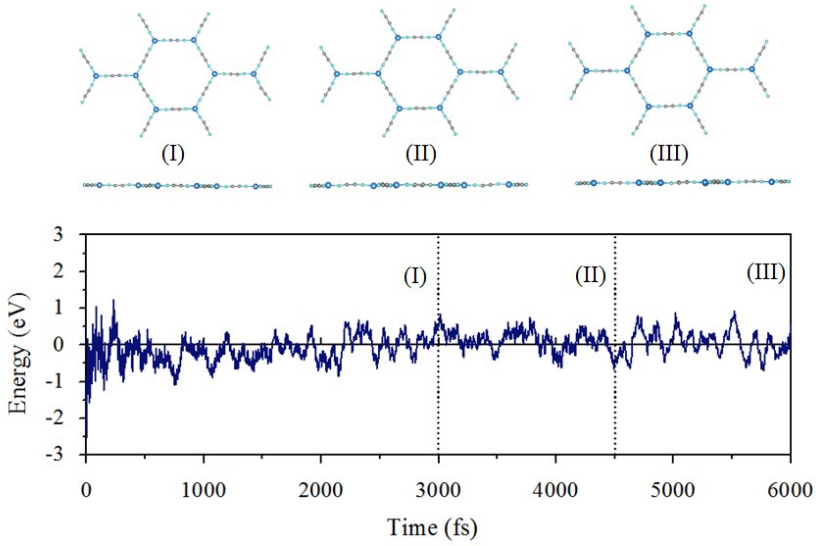

Fig. S2 Snapshot of atomic *configurations* of Mn-Cyanogen lattice at the end of the MD simulation at 3, 3.5 and 6 ps, respectively. Also, the total potential energy fluctuation during MD simulations at 300 K is shown. Note that the structure of the Mn-Cyanogen lattice does not collapse up to 300 K, indicating that the melting point of Mn-Cyanogen lattice is probably at 300 K.

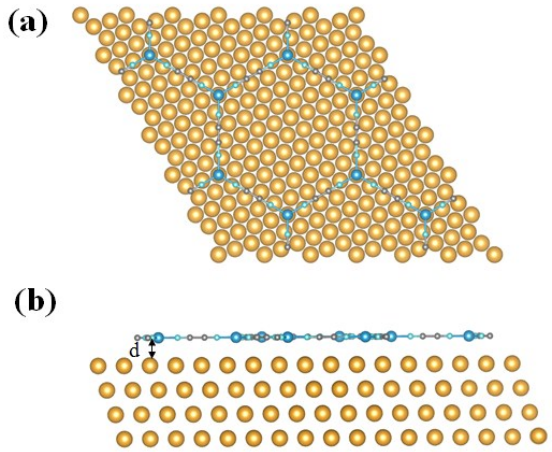

Fig. S3 Epitaxial synthesized Mn-Cyanogen lattice on Au(111) substrate. We find that the calculated adhesion energy between Mn-Cyanogen and Au (111) substrate is -3.164 eV/atom, which is comparable with those of the experimentally synthesized 2D films, such as silicene and α- boron on Ag(111) substrate. Therefore, it is expected that the Mn-Cyanogen lattice can be synthesized by the pathway similar to those of other 2D materials on the Ag (111) substrate.

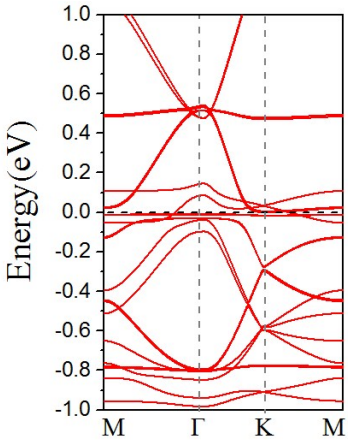

Fig. S4 Calculated band structures of Cyanogen-Mn lattice as the FM ground state has the in-plane spin orientation.