Electronic Supplementary Information (ESI)

Combination of Pulsed Laser Ablation and Inert Gas Condensation for the Synthesis of Nanostructured Nanocrystalline, Amorphous and Composite Materials

Soumabha Bag,‡*[a] Ananya Baksi,‡[a] Di Wang,[ab] Robert Kruk,[a] Cahit Benel,[a] Mohammed Reda Chellali[a] and Horst Hahn*[ac]

Address: [a]Institute of Nanotechnology, Karlsruhe Institute of Technology, 76344 Eggenstein-Leopoldshafen, Germany

[b]Karlsruhe Nano Micro Facility, Karlsruhe Institute of Technology, 76344 Eggenstein-Leopoldshafen, Germany

[c]Herbert Gleiter Institute of Nanoscience, Nanjing University of Science and Technology, Nanjing, China

‡These authors contributed equally

Email: Soumabha Bag - soumabha.bag@kit.edu and

Horst Hahn - horst.hahn@kit.edu

*Corresponding author

Supporting Information 1:

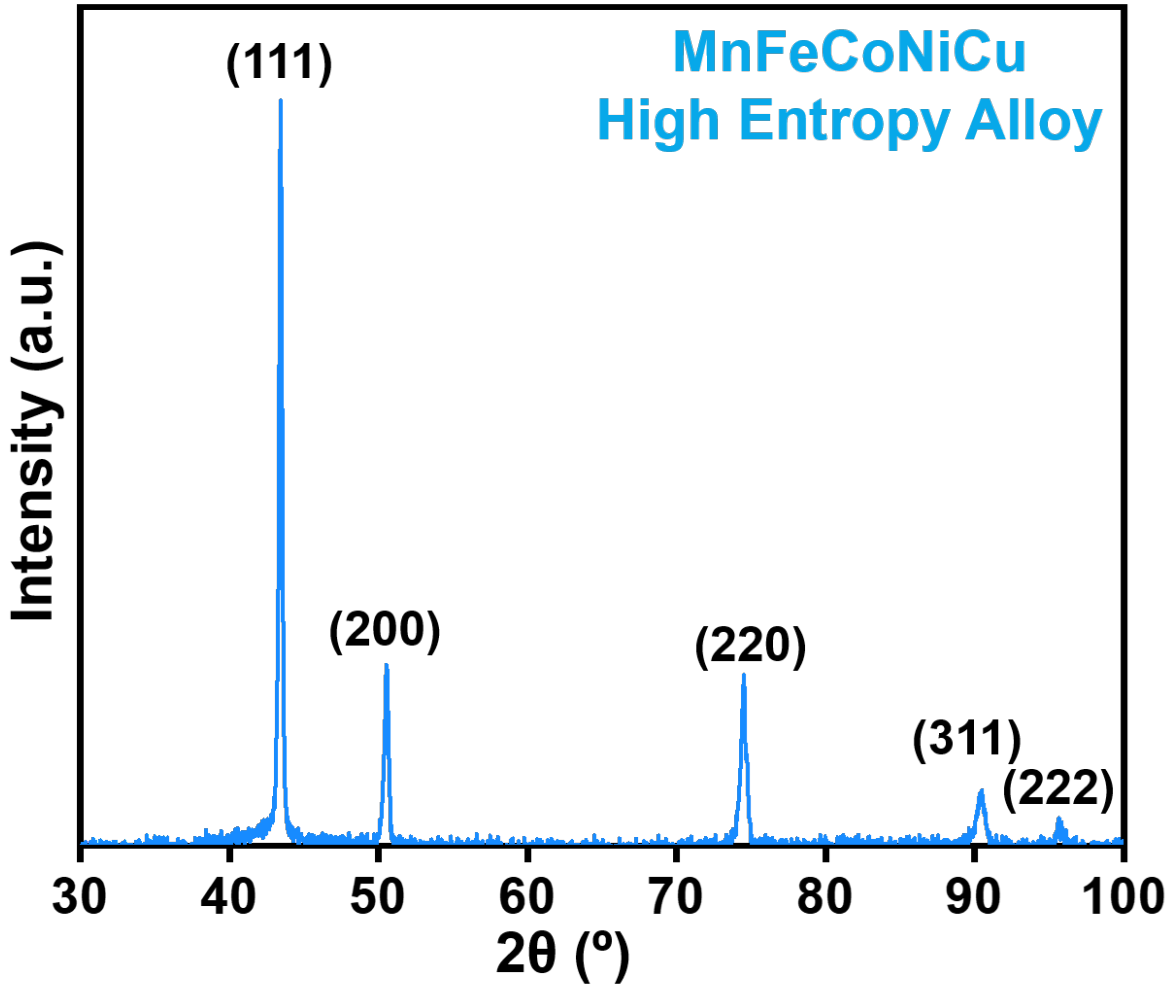

Figure S1: X-ray diffractogram of HEA (MnFeCoNiCu) sample. Strong peaks at (111), (200), (220), (311) and (222) indicates the presence of fcc phase in the ablated nanopowders.

Supporting Information 2:

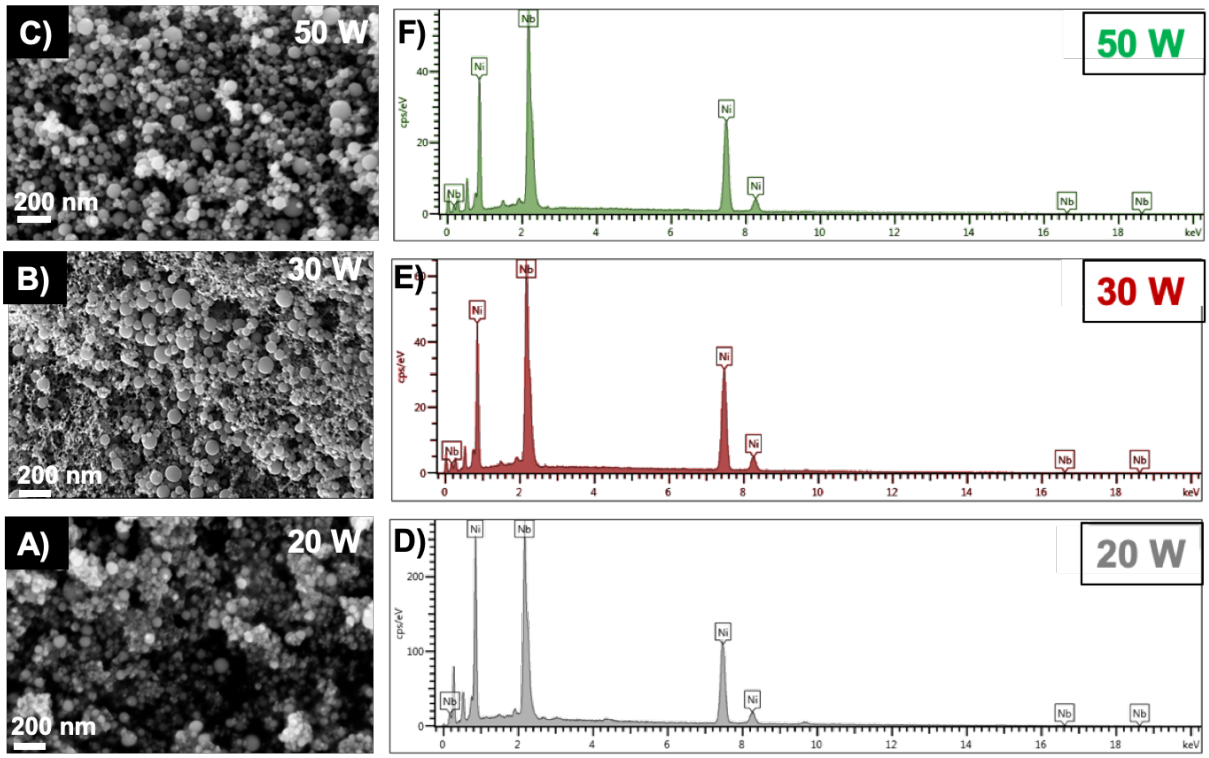

Figure S2: SEM images of the as-synthesized particles at A) 20 W, B) 30 W and C) 50 W laser powers. Corresponding EDX spectra are shown in D) to F).

Supporting Information 3:

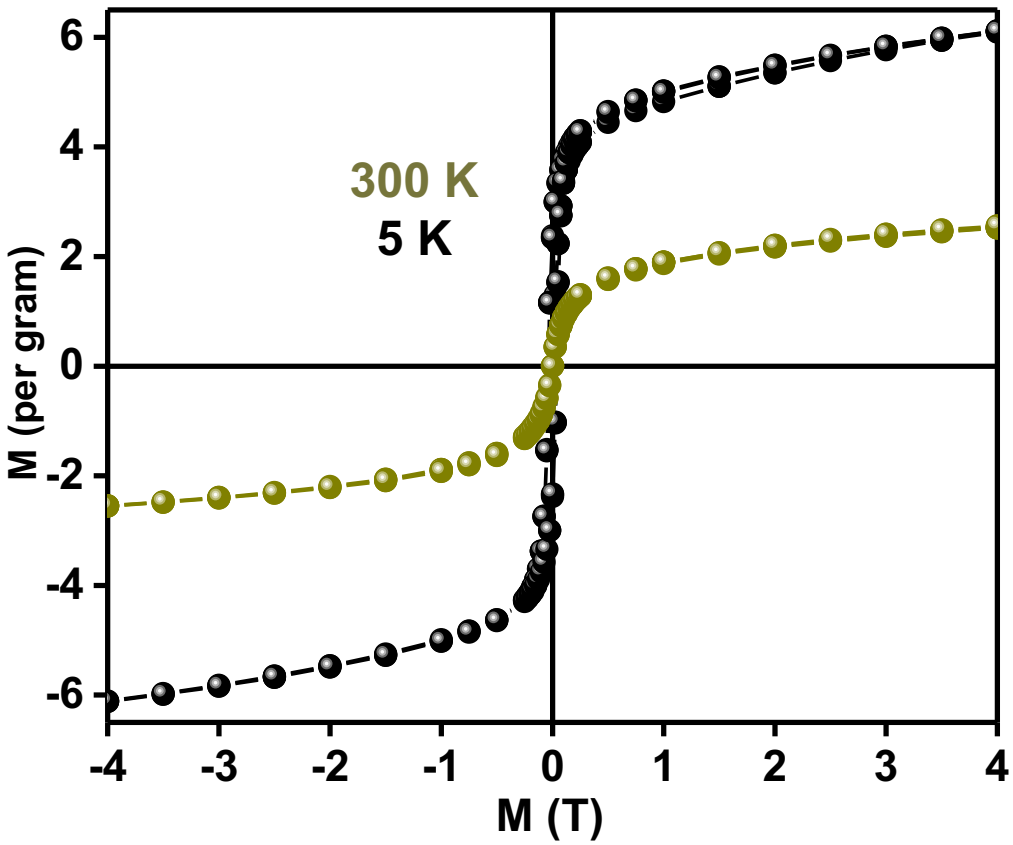

Figure S3: Temperature dependence of the magnetisation hysteresis loops of $Ni_{60}Nb_{40}$ nanopowder synthesized at 20 W laser power.

Supporting Information 4:

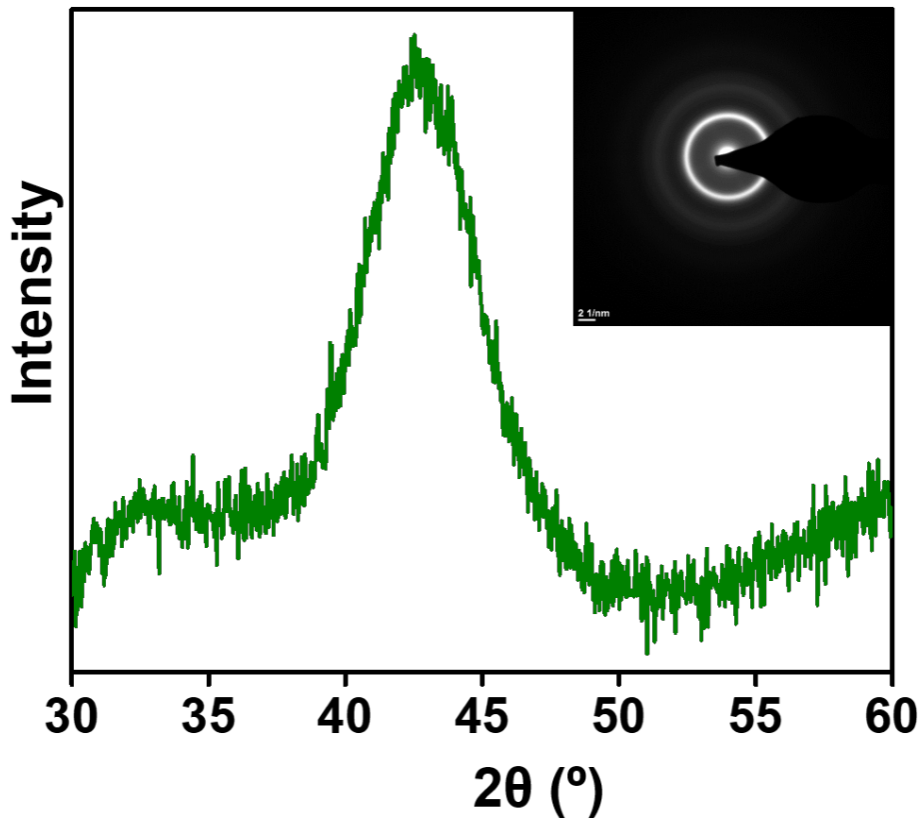

Figure S4: Structural characterization of $Ni_{60}Nb_{40}$ melt-spun-ribbon (MSR). Featureless halo XRD pattern and diffuse rings in SAED (in the inset) indicate presence of amorphous phase in the sample.