

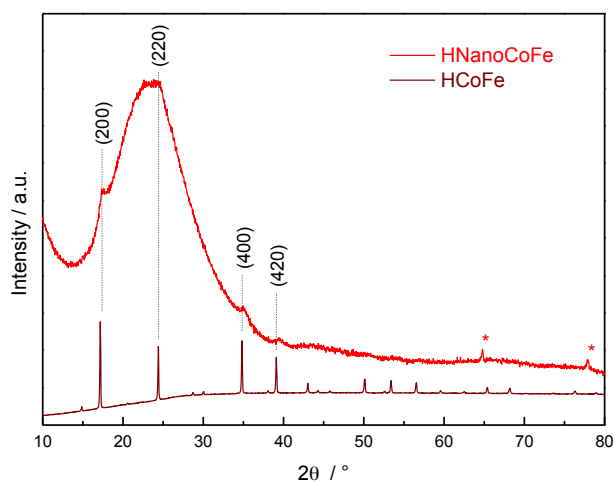
Photomagnetism in 5 nm nanocrystals of the alkali cation free-CoFe Prussian blue analogue embedded in a silica matrix.

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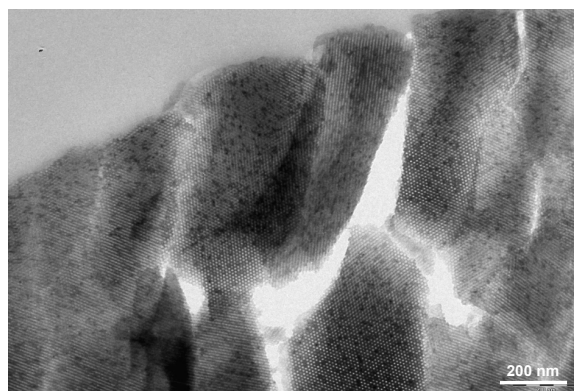
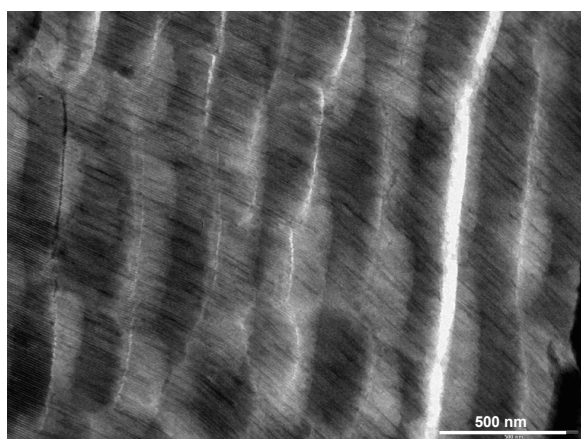
- S1.** Powder X-ray diffraction pattern of **HNanoCoFe** compared to the one of **HCoFe** and TEM images of **RbNanoCoFe**.
- S2.** AC magnetic susceptibility measurements for **HNanoCoFe** a) in the ground state and b) in the photo-excited state (**HNanoCoFe***).
- S3.** Time dependence of the magnetization of **KNanoCoFe** under irradiation.
- S4.** Temperature dependence of the magnetization of **HNanoCoFe** before and after irradiation.
- S5.** Temperature dependence of the derivative of the ZFC magnetization of **HNanoCoFe** and **HNanoCoFe***.
- S6.** SEM Image of **HCoFe**.
- S7.** IR spectra of **HCoFe** and **HNanoCoFe** over the frequency range corresponding to the stretching vibration mode of cyanide.
- S8.** Temperature dependence of the FC-ZFC magnetization curves of **HCoFe** diluted in silica.
- S9.** Temperature dependence of the FC-ZFC magnetization curves of **RbNanoCoFe** before and after irradiation.
- S10.** ZFC magnetization curve of **HNanoCoFe** and **RbNanoCoFe***.

S1. a) Powder X-ray diffraction pattern of **HNanoCoFe** compared to the one of **HCoFe** (the peaks marked by an asterisk correspond to those of the aluminum sample holder), b) TEM images of **RbNanoCoFe**.

a)



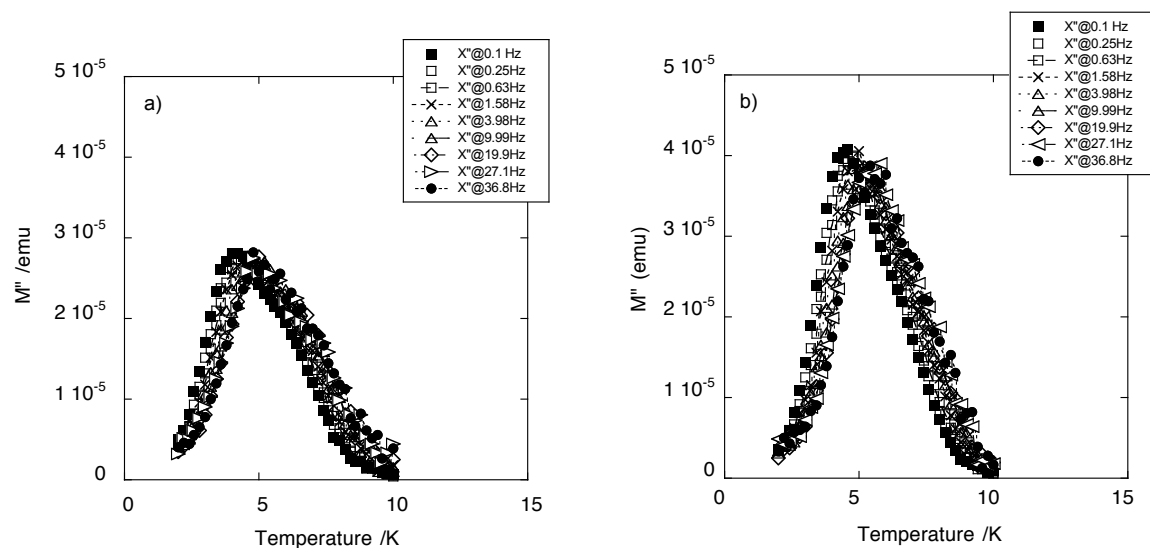
b)



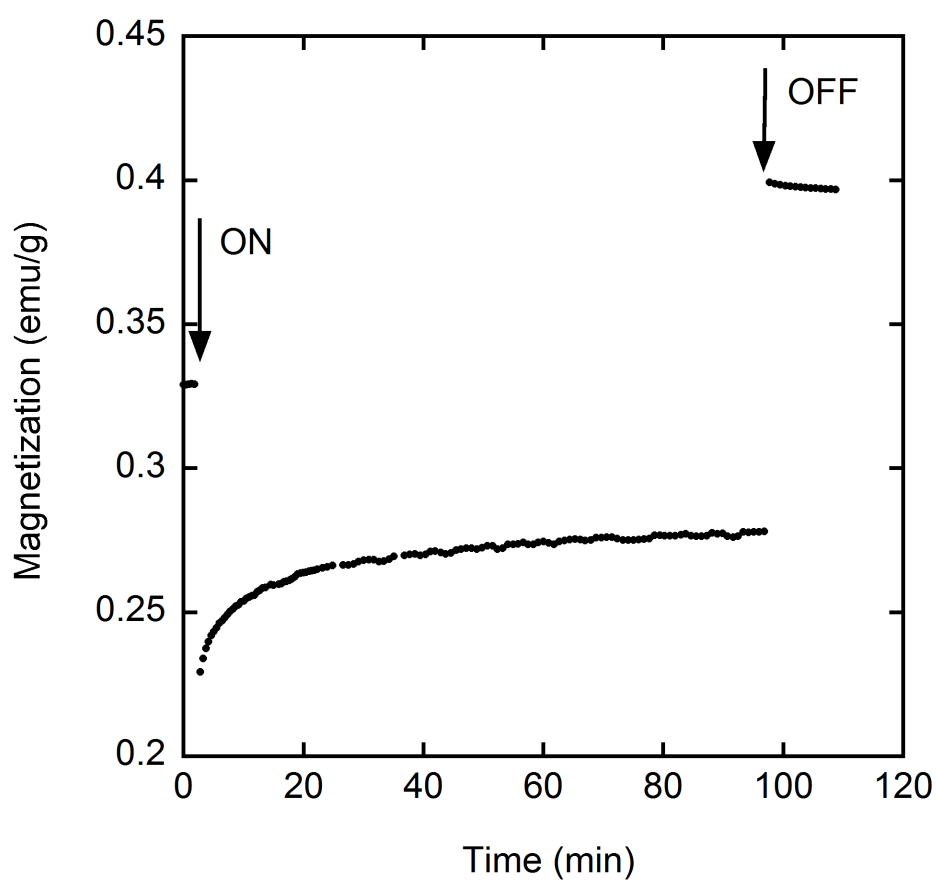
The alkali cation free Prussian blue analogs being systematically damaged by the electron beam, their nanoparticles cannot be visualized in the silica monoliths. As a representative example, TEM images of **RbNanoCoFe** with the same Co/Si ratio are shown instead.

S2. AC susceptibility measurements for HNanoCoFe a) in the ground state and b) in the photo-excited state (HNanoCoFe^*)

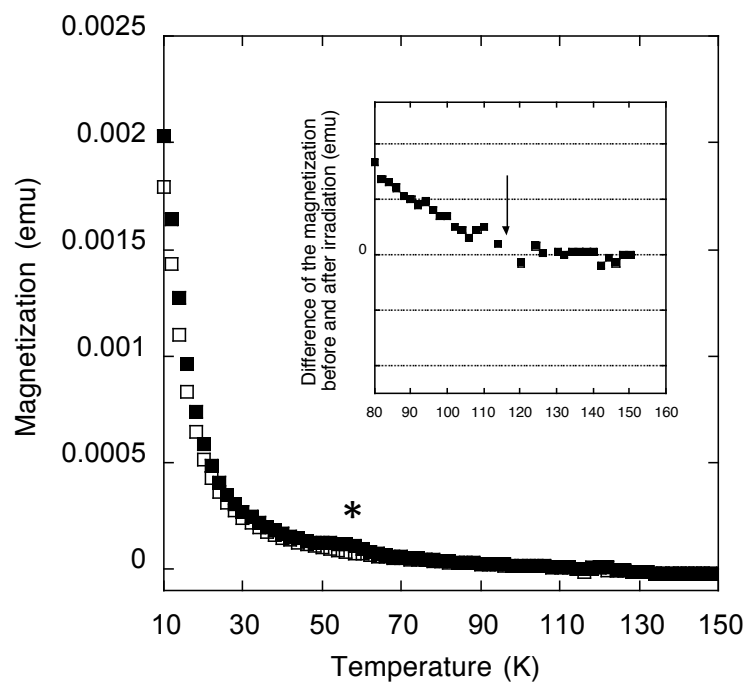
10 mg of powder was mixed with nujol oil and spread on a piece of cardboard, then irradiated at 10 K in the SQUID with a laser diode (635 nm , 25 mW/cm^2 , 50 mW/cm^2 , 30 min). AC data were recorded using a XL-7 SQUID magnetometer working with an oscillating field of 3 Oe and frequencies ranging from 0.1 to 50 Hz.



S3. Time dependence of the magnetization of **KNanoCoFe** under irradiation ($\lambda=635$ nm).

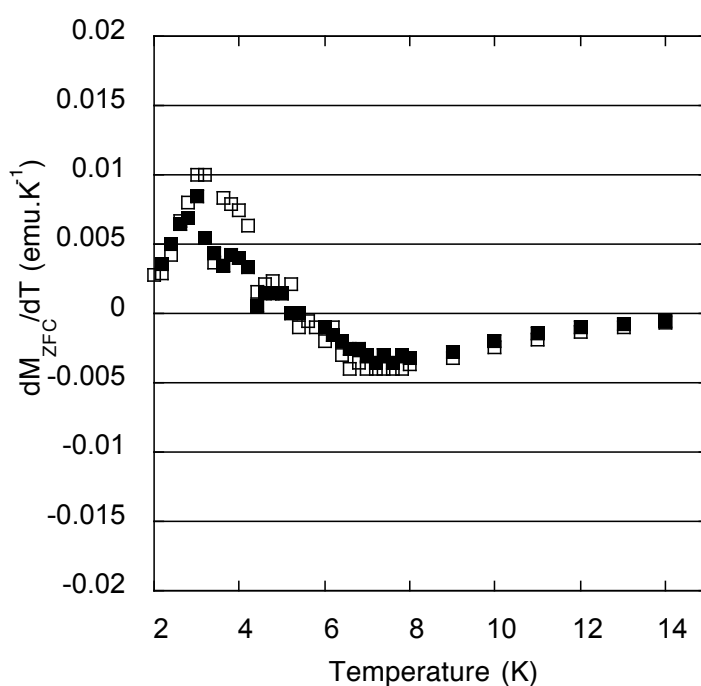


S4. Temperature dependence of the magnetization of **HNanoCoFe** before (open square) and after (filled square) irradiation, the insert shows a magnification of the difference of the magnetization before and after irradiation (the contribution marked by an asterisk is due to the presence of O_2).

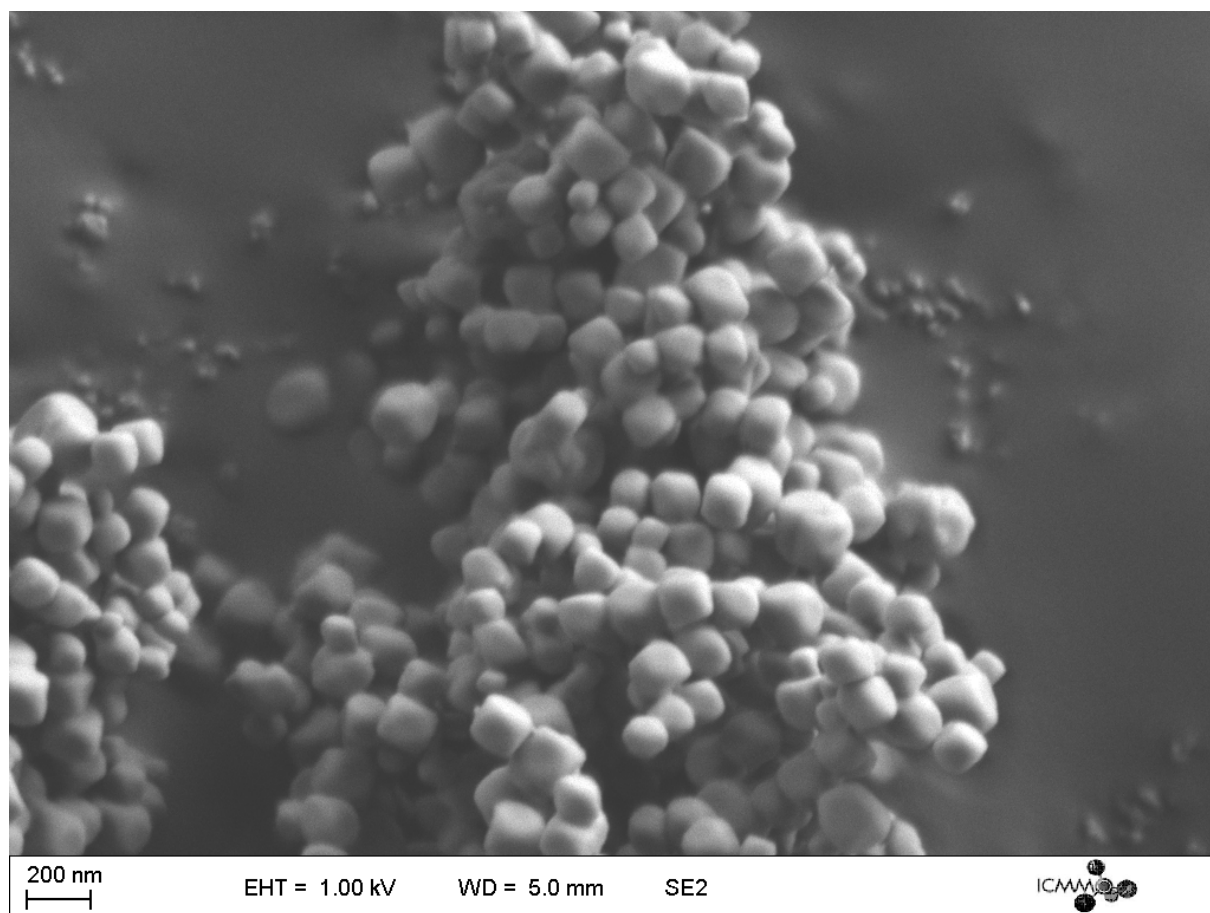


S5. Temperature dependence of the derivative of the ZFC magnetization of **HNanoCoFe** (black square) and **HNanoCoFe*** (white square).

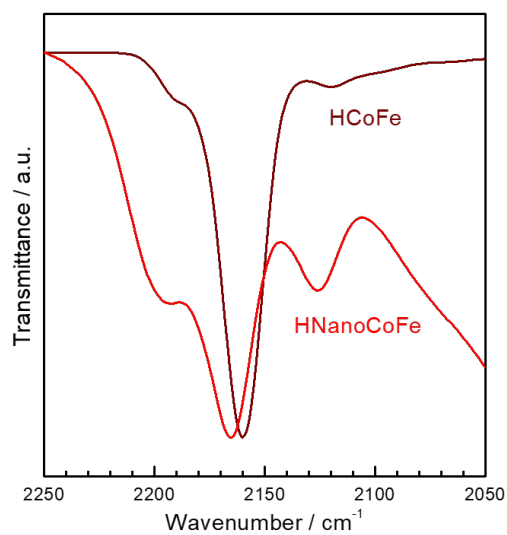
The temperature at which $dM_{ZFC}/dT = 0$, and therefore the temperature of the maximum of the ZFC curve, is the same for both compounds **HNanoCoFe** and **HNanoCoFe***.



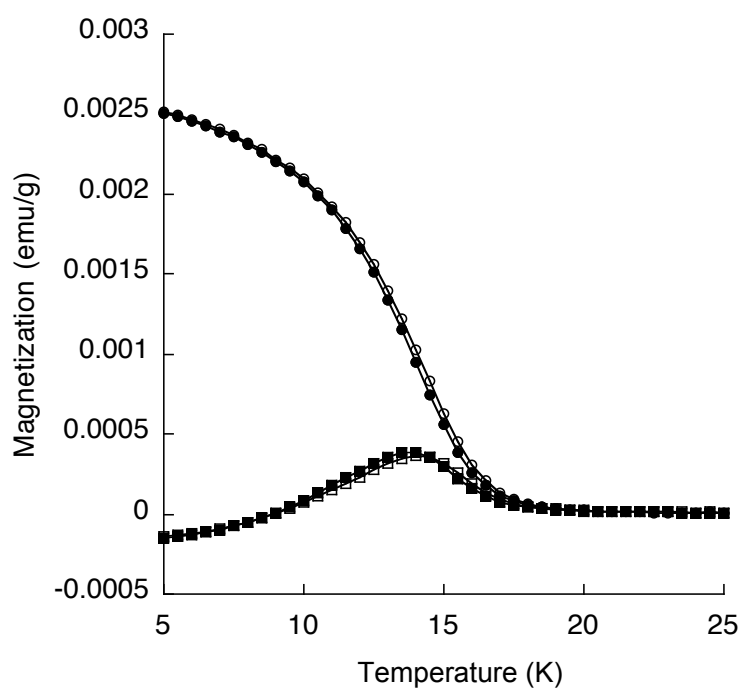
S6. SEM Image of HCoFe.



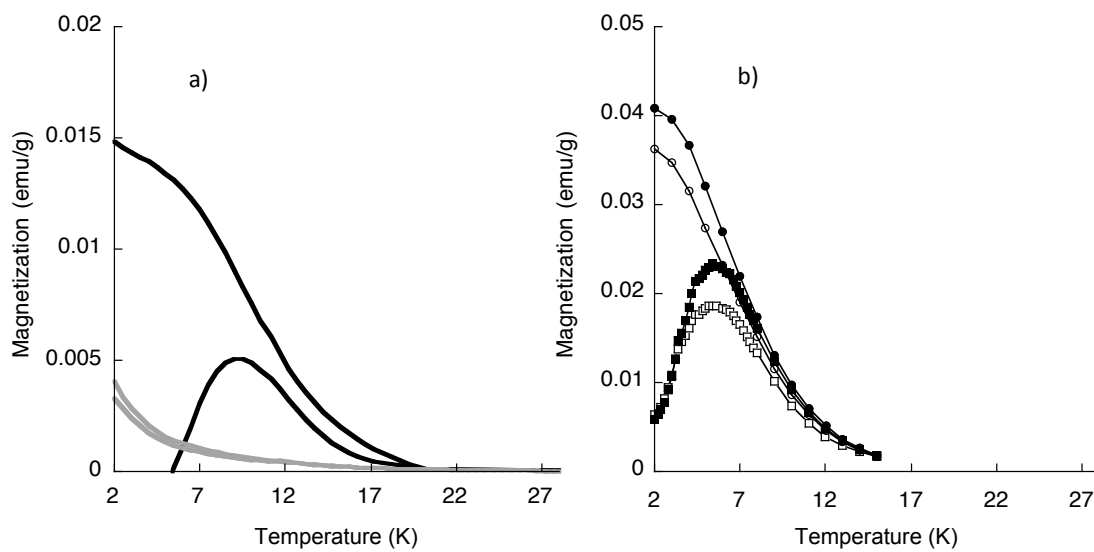
S7. IR spectrum of **HCoFe** (brown) compared to that of **HNanoCoFe** (red) over the frequency range corresponding to the stretching vibration mode of cyanide.



S8. Temperature dependence of the magnetization of **HCoFe** diluted in silica: ZFC before irradiation (white square), ZFC after irradiation (black square), FC before irradiation (white circle) and FC after irradiation (black circle) recorded under an applied field of 50 Oe.



S9. a) Temperature dependence of the magnetization of **RbNanoCoFe** : FC-ZFC before irradiation (grey line) and FC-ZFC after irradiation (black line) recorded under an applied field of 50 Oe. b) For comparison, temperature dependence of the magnetization of **HNanoCoFe** : ZFC before irradiation (white square), ZFC after irradiation (black square), FC before irradiation (white circle) and FC after irradiation (black circle) recorded under an applied field of 50 Oe, The amount of PBA nanoparticles in the sample used for the measurement being unknown, the value of the magnetization cannot be compared from one compound to the other.



S10. ZFC magnetization curve of **HNanoCoFe** (purple) and **RbNanoCoFe*** (red).
In both samples the CoFe PBA nanocrystals are mainly made of $\text{Co}^{\text{II}}\text{Fe}^{\text{III}}$ pairs.

