## **Supporting Information**

## Soft-chemical Synthetic Route to Superparamagnetic FeAs@C Core-Shell Nanoparticles Exhibiting High T<sub>B</sub>

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Figure S1: PXRD pattern of nanoparticles synthesized at 250°C.



Figure S2: Histogram of nanoparticles sizes including the shell



**Figure S3:** Line scan across individual nanoparticles collected after 45min of the reaction showing the enhanced concentration of As near the edges.



**Figure S4:** (A), (B), The isothermal magnetization curves at 77 K, 350 K respectively showing the anhysteretic nature of these FeAs@C nanoparticle ensembles.



Figure S5: Mossbauer spectra of FeAs@C nanoparticle ensemble collected at 90 K.