

*Supporting Information for*

**Selective Chemical Vapor Deposition Growth of Cubic FeGe Nanowires That Support Stabilized Magnetic Skyrmions**

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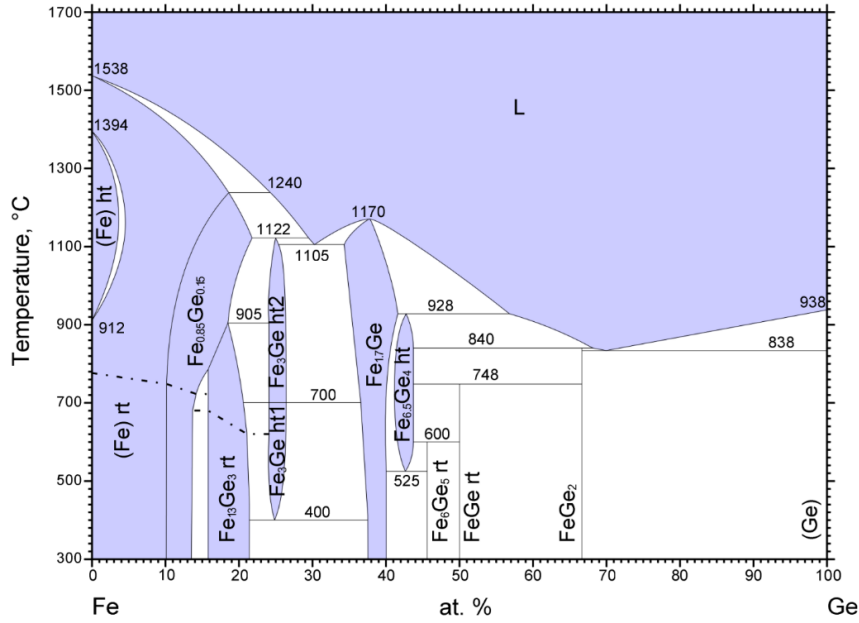
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## 1. Supporting Figures



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Figure S1. Fe-Ge binary phase diagram depicting the many different possible phases. Not shown are the 3 different polymorphs of the cubic, hexagonal, and monoclinic structures of the 1:1 Fe:Ge composition. Reproduced from ASM international.<sup>S1</sup>

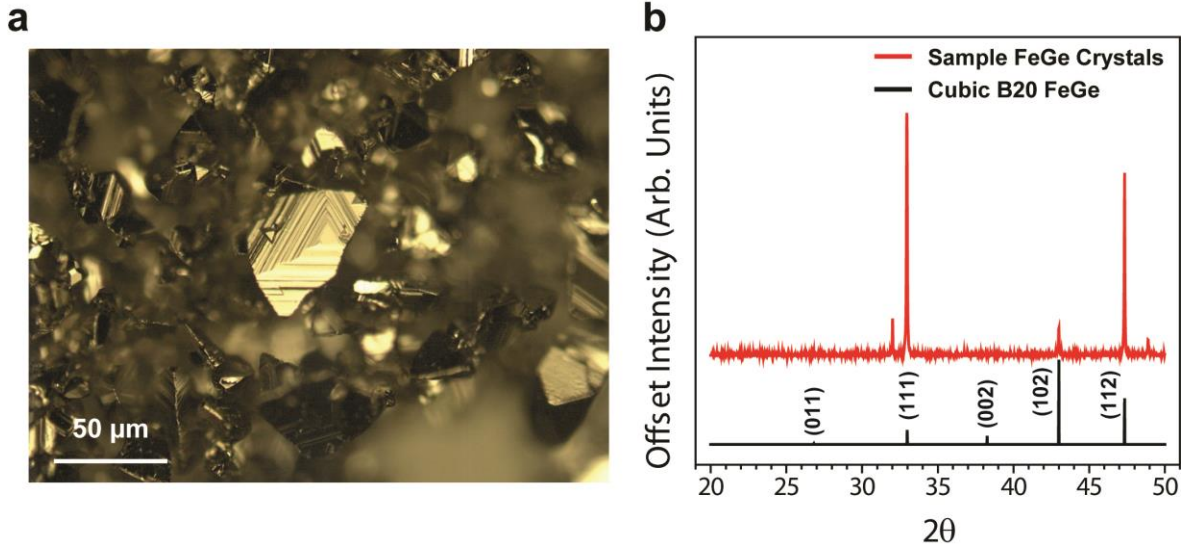


Figure S2. a) Optical microscope image of large cubic FeGe single crystals grown by a chemical vapor transport reaction. b) The X-ray diffraction pattern of the cubic FeGe single crystals in comparison with the standard PXRD (JCPDS. #65-6357) showing a preferential orientation to the (111) lattice spacing.

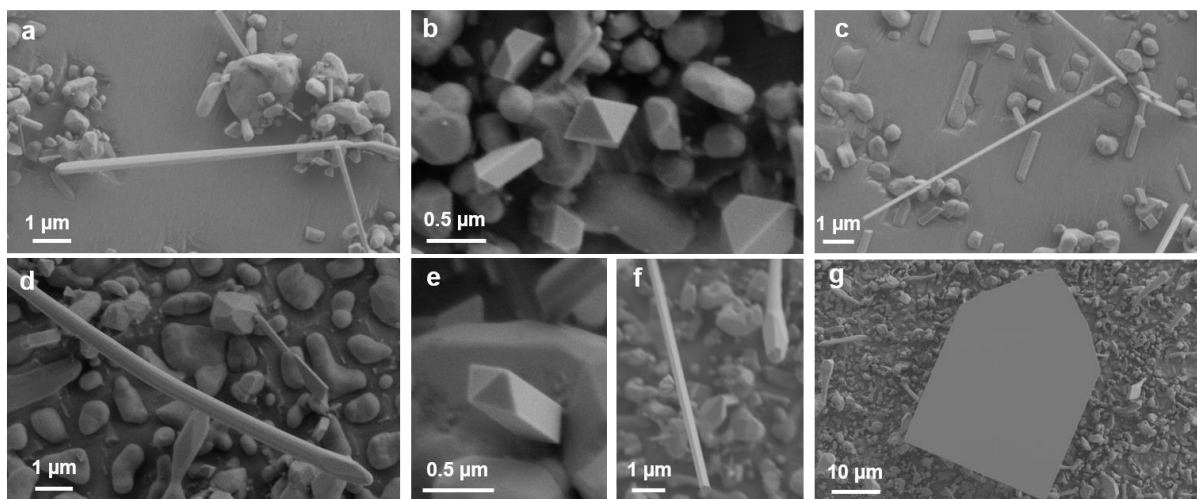


Figure S3. a-g) Scanning electron microscopy images of the variety of different nanostructures formed in both the 500 °C and 550 °C reactions.

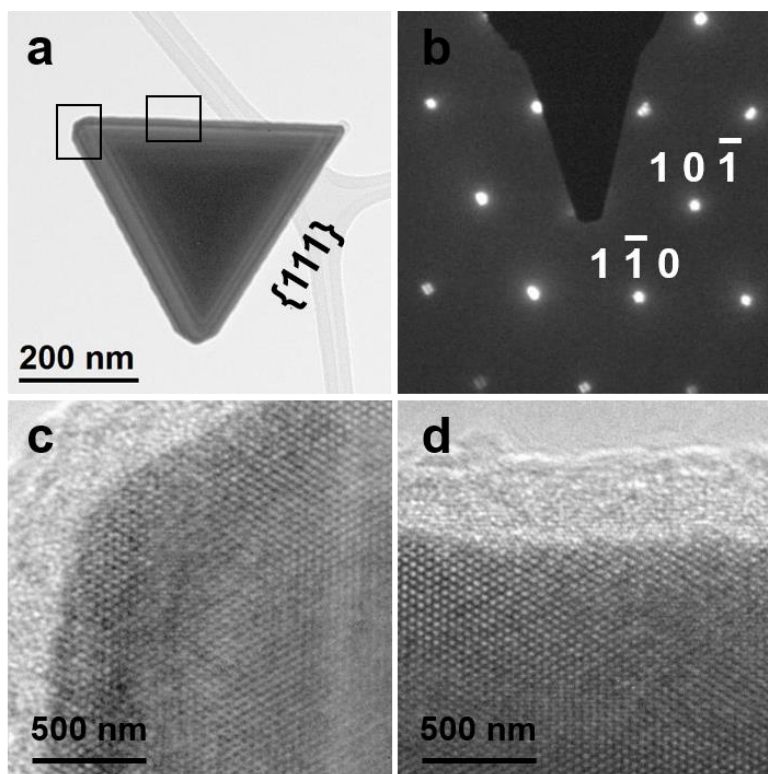


Figure S4. a) Low resolution TEM image of a tetrahedron produced by the seeded reactions. b) The corresponding TEM SAED pattern for the tetrahedron confirming its cubic FeGe crystal structure. c,d) high resolution TEM images illustrating the single crystalline nature of the nanostructure.

## References

- S1 Kato, E. & Nunoue, S. in *Binary Alloy Phase Diagrams, Second Edition* Vol. 2 (ed T. B. Massalski) 1704-1707 (ASM International, 1990).