

## Ammonia and iron cointercalated iron sulfide $(\text{NH}_3)\text{Fe}_{0.25}\text{Fe}_2\text{S}_2$ : hydrothermal synthesis, crystal structure, weak ferromagnetism and crossover from negative to positive magnetoresistance

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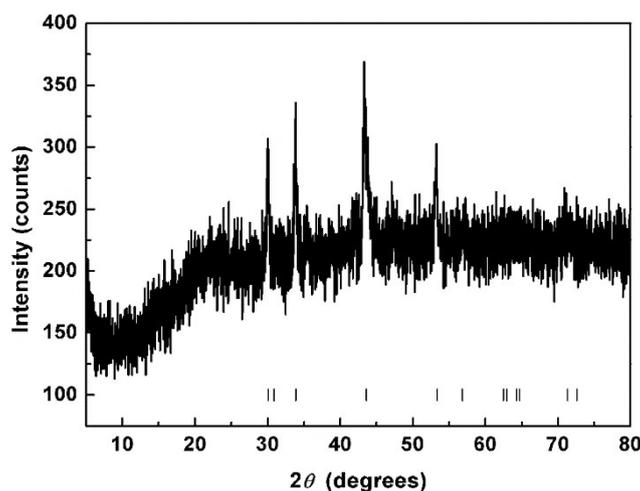
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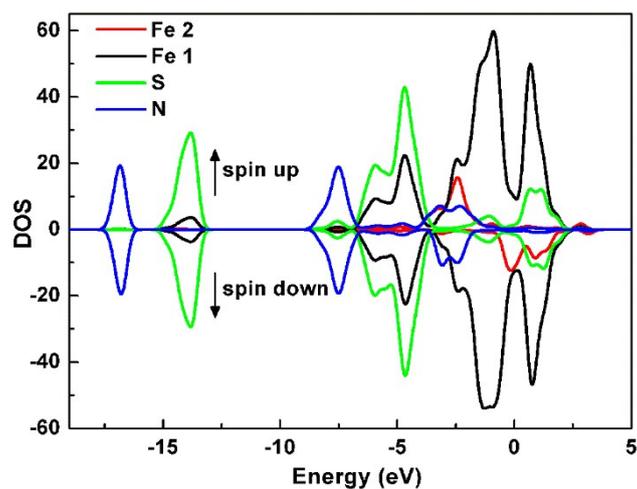
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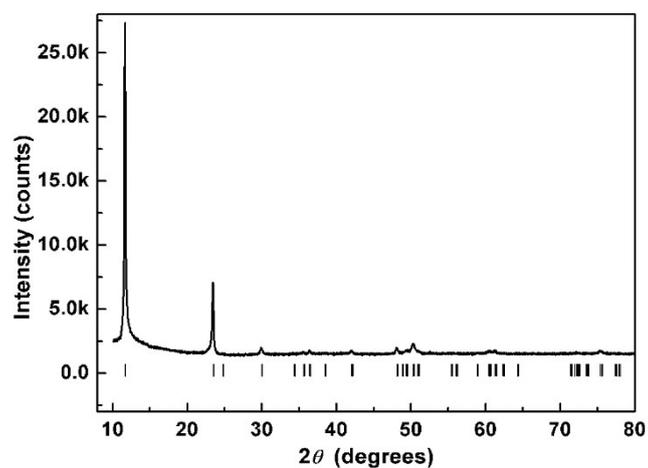
### Supplementary Information



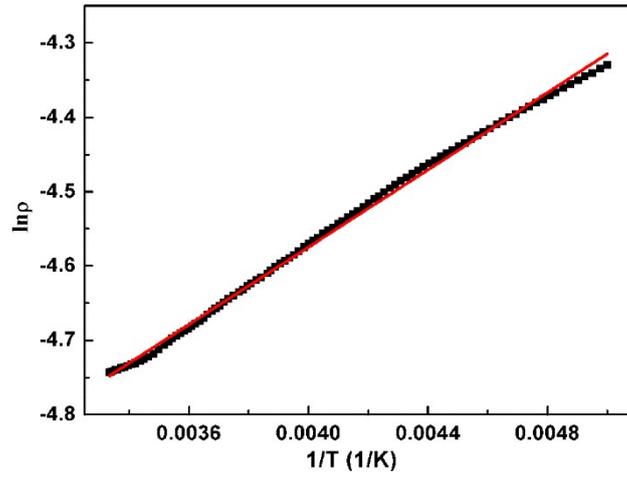
**Figure S1.** PXRD pattern of  $(\text{NH}_3)\text{Fe}_{0.25}\text{Fe}_2\text{S}_2$  collected immediately after the TGA experiments. The black vertical bars are the Bragg positions of hexagonal FeS ( $P6_3/mmc$ ).



**Figure S2.** Electronic density of states of  $(\text{NH}_3)\text{Fe}_{0.25}\text{Fe}_2\text{S}_2$ .



**Figure S3.** PXRD pattern of  $(\text{NH}_3)\text{Fe}_{0.25}\text{Fe}_2\text{S}_2$  pellet collected after annealed at  $200^\circ\text{C}$  for 48 h. The black vertical bars are the Bragg positions of the as-prepared  $(\text{NH}_3)\text{Fe}_{0.25}\text{Fe}_2\text{S}_2$ .



**Figure S4.** Linear fitting of the  $\ln \rho$  vs  $1/T$  curve in the temperature range of 200-300 K.