

## SUPPLEMENTARY MATERIAL

### **Aerosol assisted chemical vapor deposition for iron selenide thin films from single source ferrocene incorporated selenourea precursor in the presence of surfactants**

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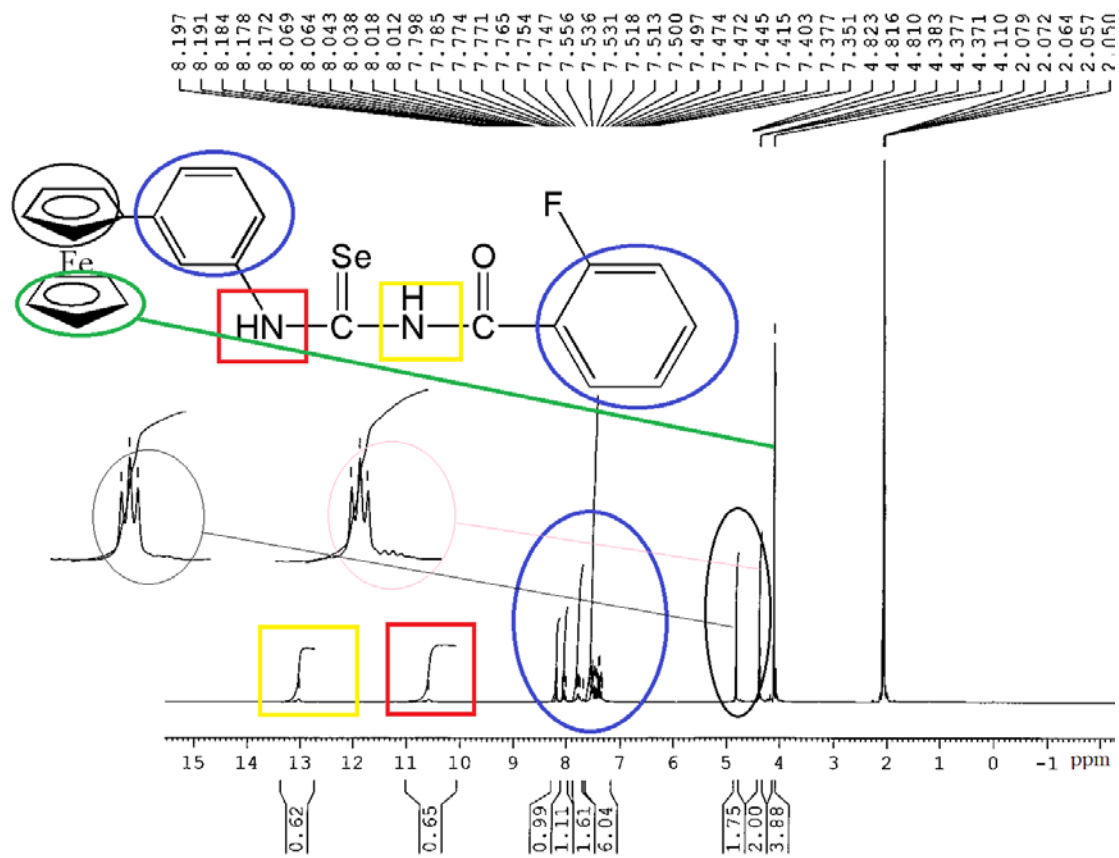


Figure S1. Proton NMR spectrum of M2F.

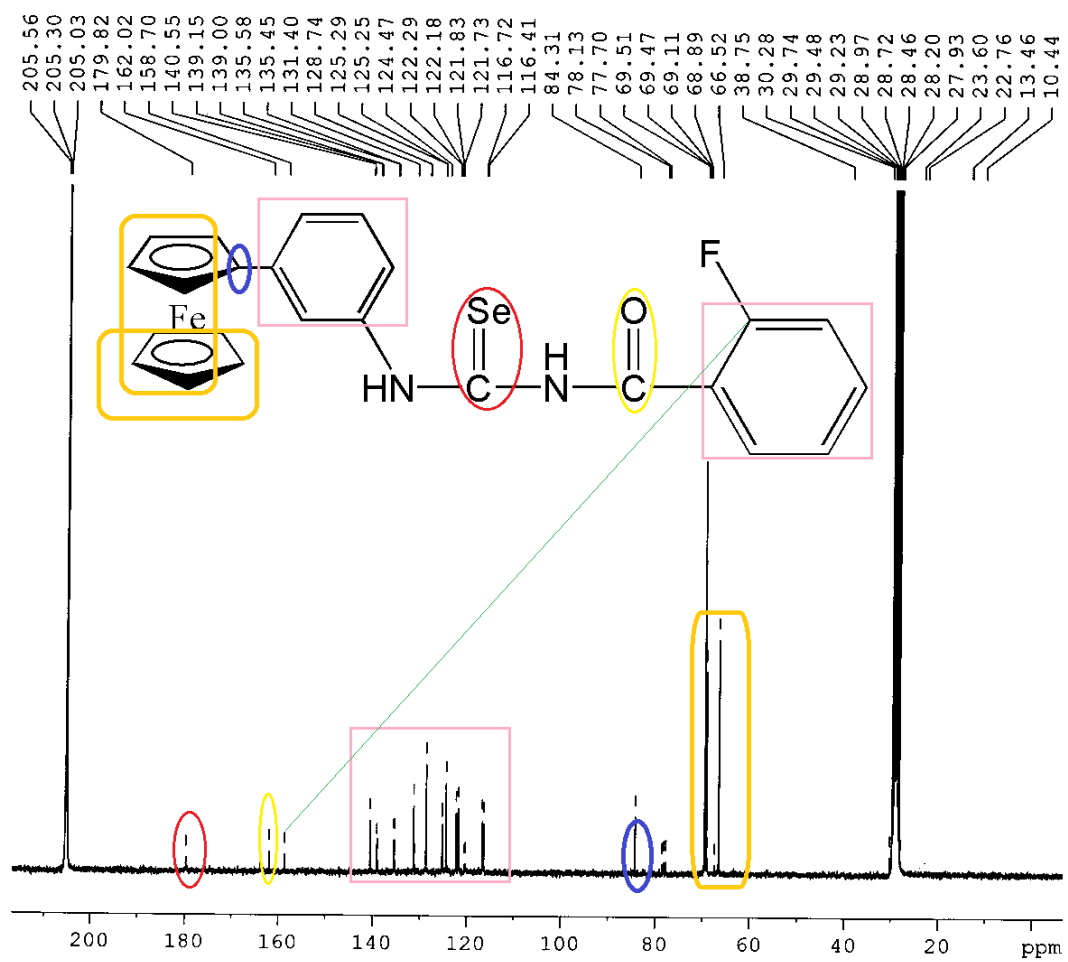


Figure S2. Carbon-13 NMR spectrum of M2F.

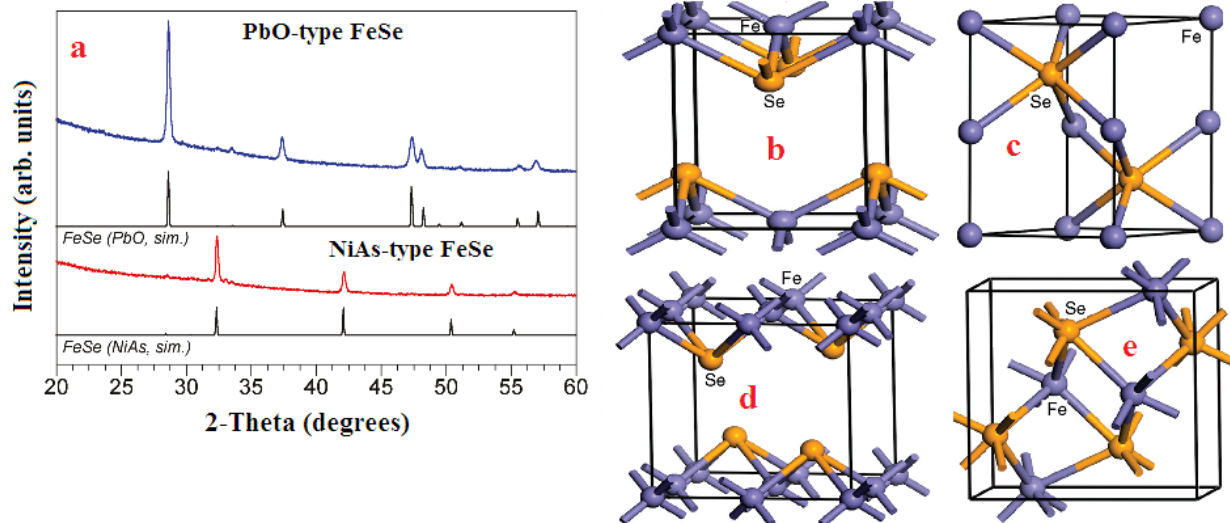


Figure S3. a) XRD patterns for tetragonal (blue) and hexagonal (red) FeSe. Various crystallographic phases of FeSe; b) tetragonal ( $P4/nmm$ ), c) hexagonal ( $P63/mmc$ ), d) LT orthorhombic ( $Cmma$ ), and e) high pressure orthorhombic ( $Pbnm$ ). Modified with permission from Ian T. Sines (J. Am. Chem. Soc. 2011, 133, 1294-1297, Copyright ACS) and McQueen et. al. (Phys. Rev. B 2009, 79, 014522-1-7, Copyright APS).

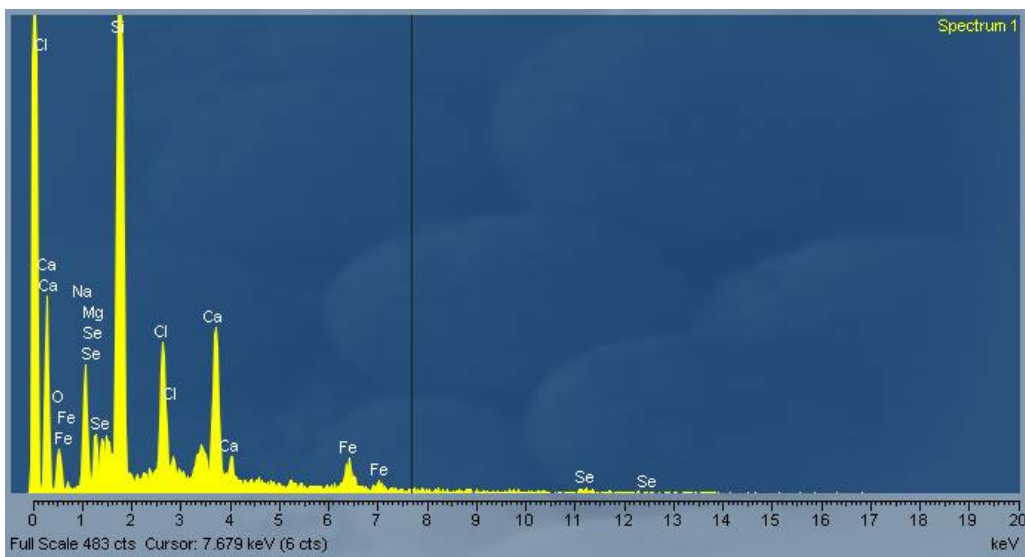


Figure S4. EDS image of film 2 (fabricated with 2.5 % triton with precursor), showing number of elements which are present in the glass support, but provides good qualitative information for the presence of Fe and Se.

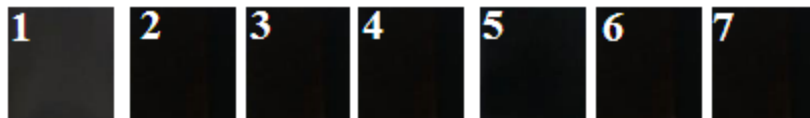
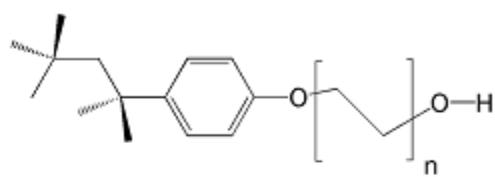


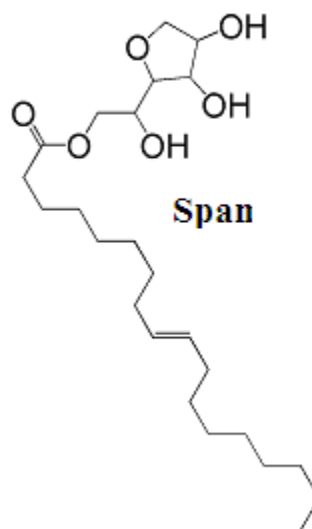
Figure S5. Photographs of the seven FeSe thin films with 3 mega pixel mobile camera (HTC Explorer A310e), representing uniformity and adherence.

Chart S1. Structure of spam and triton.



**Triton**

$n = 9-10$



**Span**