Heterocyclic dithiocarbamato-iron(III) complexes: single-source precursors for aerosol-assisted chemical vapour deposition (AACVD) of iron sulfide thin films

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ESI Fig. S1. GC MS spectrum of complex (1)

ESI Fig. S2. XRD pattern of the decomposed product of complex (1) under N₂ flow studied from 180 to 310 °C. Only few patterns were chosen to represent in this study. (A red stick represents hexagonal Fe₀.₉₇₅S, card number 01-080-1032 and black for mackinawite phase FeS, card number 04-003-6935).
ESI Fig. S3. UV-Vis-NIR absorption spectra of Fe-S thin films deposited 350 °C from complex (1) with chloroform used as a solvent. Inset: Tauc plot showing the estimated optical band gap of Fe-S film.

ESI Fig. S4. Powder XRD of the thin films deposited using toluene solvent and 1 mL of tert-butyl thiol.
**ESI Fig. S5.** 2-D and 3-D AFM height profiles of Fe-S thin films deposited by AACVD at 450 °C for 2 hrs using toluene solvent and added amount of 1 mL tert-butyl thiol when complexes (1) (a & b) and (2) (c & d) were used as precursors.
**ESI Fig. S6.** UV-Vis-NIR absorption spectra of Fe-S thin films deposited 450 °C using toluene solvent and tert-butyl thiol. Inset: Tauc plot showing the estimated optical band gap of the film.