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Electronic Supplementary Information for MS:

Mercury(II) coordination polymers with pyrazine derivatives

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Fig. S1. Depiction of the branched tube for syntheses and isolation of single crystals of compounds 1-8.
Fig. S2. a) The simulated XRD pattern from single crystal X-ray data of the compound \([\text{Hg}_2(\mu\text{-pyr})(\mu\text{-I})_2\text{I}_2]_n (2)\) at 100 K, b) The XRD pattern of \([\text{Hg}_2(\mu\text{-pyr})(\mu\text{-I})_2\text{I}_2]_n (2)\) at room temperature (both based on Cu Kα radiation).
Fig. S3. a) The simulated XRD pattern from single crystal X-ray data of the compound [Hg(μ-pyr)(μ-SCN)₂]ₙ (3) at 100 K. b) The XRD pattern of [Hg(μ-pyr)(μ-SCN)₂]ₙ (3) at room temperature (both based on Cu Kα radiation).
Fig. S4. a) The simulated XRD pattern from single crystal X-ray data of the compound [Hg₂(μ-2,5-dmpyr)(μ-Cl)]₄ (4) at 100 K, b) The XRD pattern of [Hg₂(μ-2,5-dmpyr)(μ-Cl)]₄ (4) at room temperature (both based on Cu Kα radiation).
**Fig. S5.** a) The simulated XRD pattern from single crystal X-ray data of the compound \([\text{Hg}_2(\mu-2,5\text{-dmpyr})(\mu-\text{Br})_4]_n\) (5) at 100 K, b) The XRD pattern of \([\text{Hg}_2(\mu-2,5\text{-dmpyr})(\mu-\text{Br})_4]_n\) (5) at room temperature (both based on Cu K\(\alpha\) radiation).
Fig. S6. a) The simulated XRD pattern from single crystal X-ray data of the compound [Hg₂(μ-2,5-dmpyr)(μ-SCN)₂(SCN)₂]₅ (6) at 100K, b) The XRD pattern of [Hg₂(μ-2,5-dmpyr)(μ-SCN)₂(SCN)₂]₅ (6) at room temperature (both based on Cu Kα radiation).
Fig. S7. **a**) The simulated XRD pattern from single crystal X-ray data of the compound [Hg(2,6-dmpyr)(μ-Br)$_2$]$_n$ (7) at 100 K, **b**) The XRD pattern of [Hg(2,6-dmpyr)(μ-Br)$_2$]$_n$ (7) at room temperature (both based on Cu K$_\alpha$ radiation).
Fig. S8. a) The simulated XRD pattern from single crystal X-ray data of the compound [Hg(μ-2,6-dmpyr)(μ-SCN)$_2$]$_n$ (8) at 100 K, b) The XRD pattern of [Hg(μ-2,6-dmpyr)(μ-SCN)$_2$]$_n$ (8) at room temperature (both based on Cu K$_\alpha$ radiation).
Fig. S9. Thermal ellipsoid plot of $[\text{Hg}(\mu\text{-pyr})(\mu\text{-SCN})_2]_n$ (3) showing the S…C and S…N interactions.
Fig. S10. Thermal ellipsoid plot of [Hg₂(μ-2,5-dmpyr)(μ-Br)₄]ₙ (5) showing the two-dimensional network generated via Br···HC hydrogen bonds.
Fig. S11. Thermal ellipsoid plot of [Hg₂(μ-2,5-dmpyr)(μ-SCN)₂(SCN)₂]ₙ (6) showing the S···HC interactions.
Fig. S12. Thermal behavior of [Hg₂(μ-pyr)(μ-I₂)₂]₈ (2).
Fig. S13. Thermal behavior of [Hg₂(μ-2,5-dmpyr)(μ-Cl)₄]ₙ (4).
Fig. S14. Thermal behavior of [Hg₂(μ-2,5-dmpyr)(μ-Br)₄]₆ (5).
Fig. S15. Thermal behavior of [Hg$_2$(μ-2,5-dmppy)(μ-SCN)$_2$(SCN)$_2$]$_n$ (6).
Fig. S16. Thermal behavior of [Hg(2,6-dmpyr)(μ-Br)₂]ₙ (7).
Fig. S17. Thermal behavior of [Hg(μ-2,6-dmpyr)(μ-SCN)₂]ₙ (8).