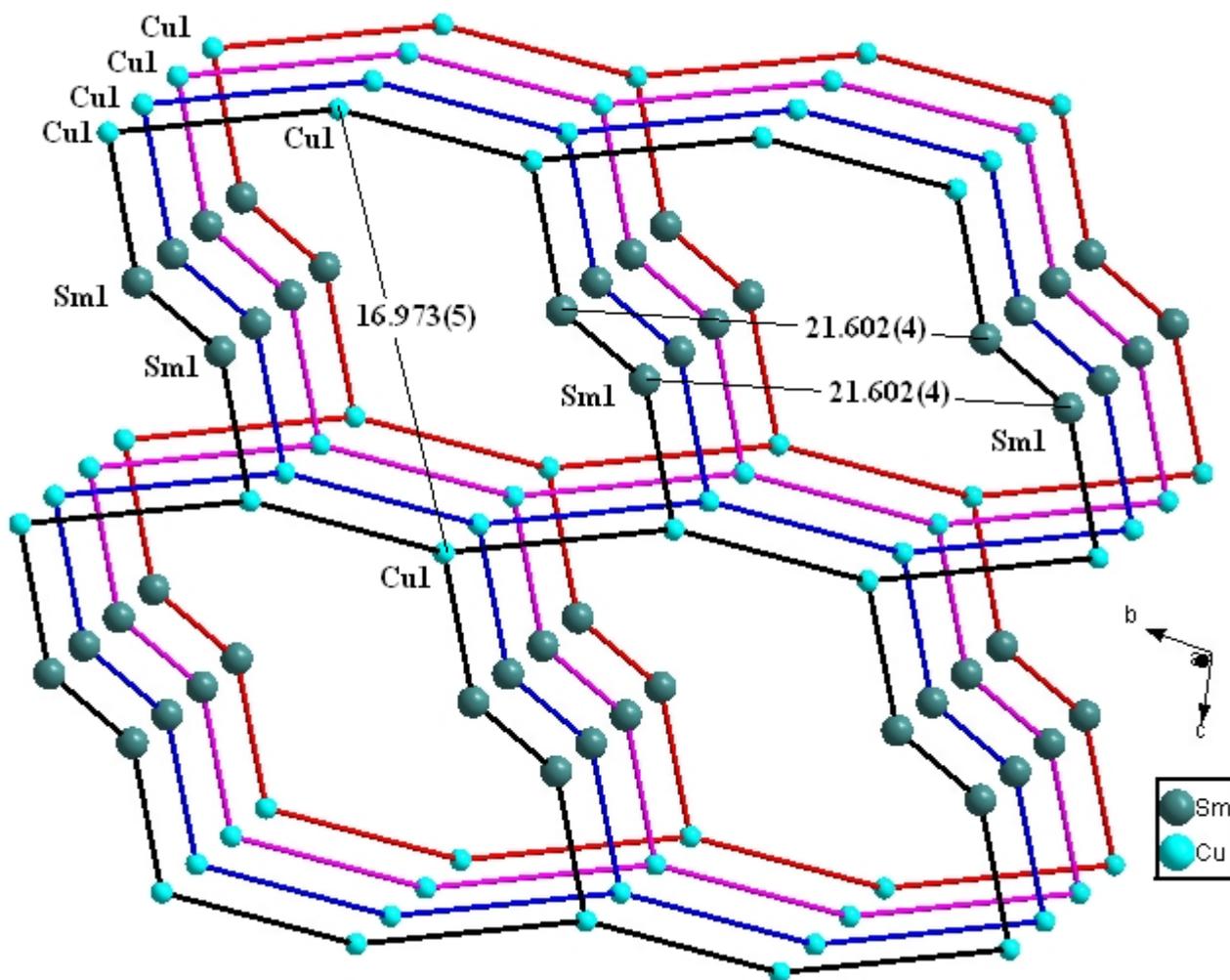
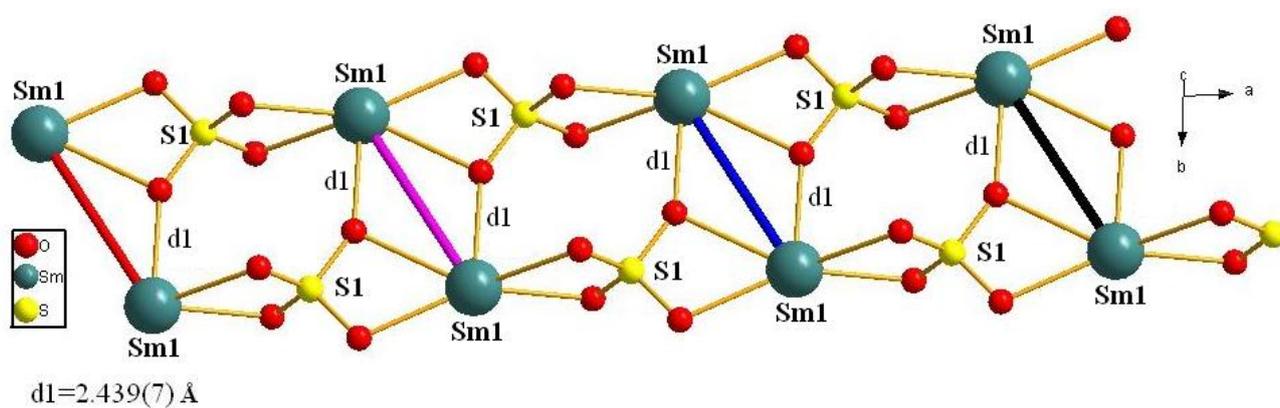


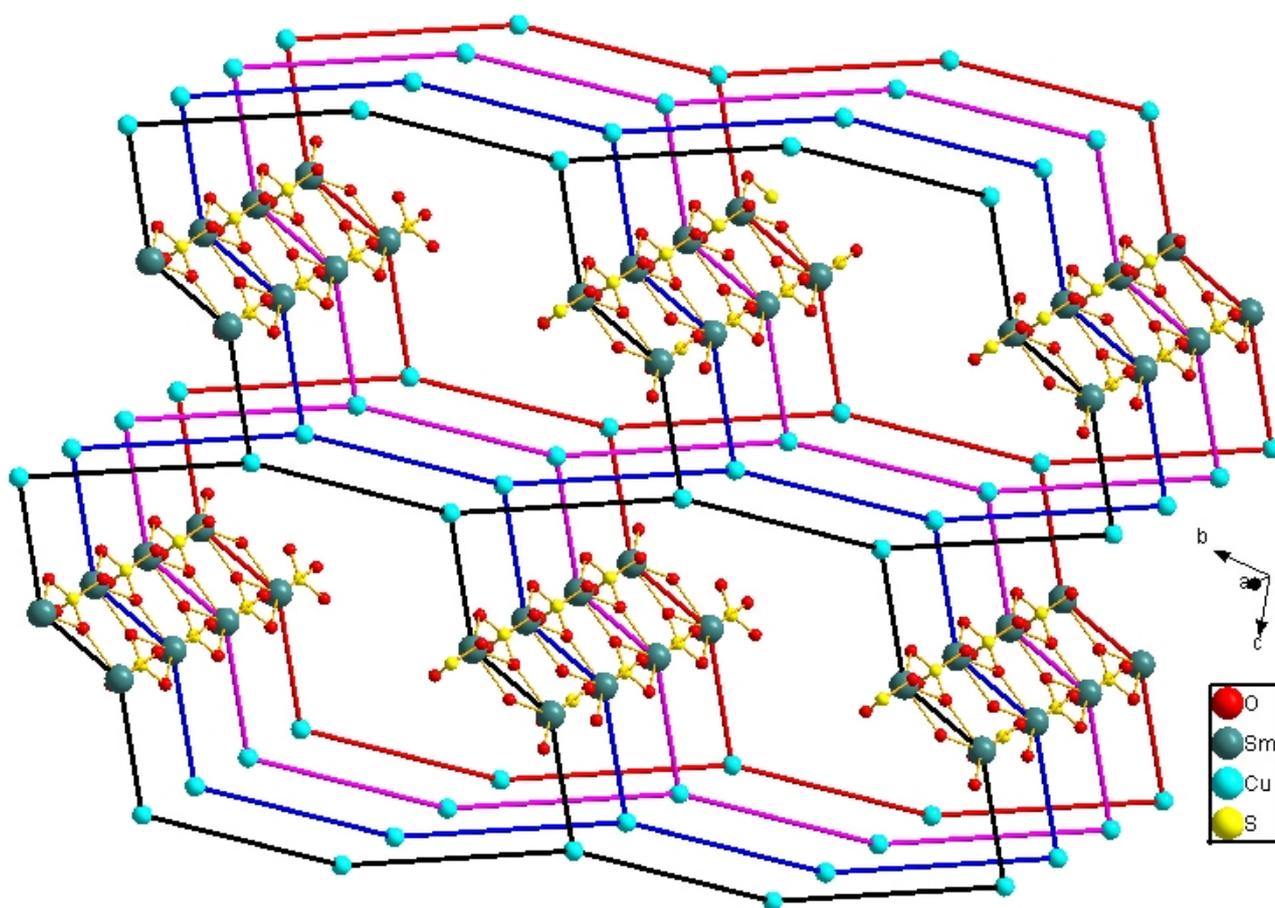
Electronic Supplementary Information (ESI)

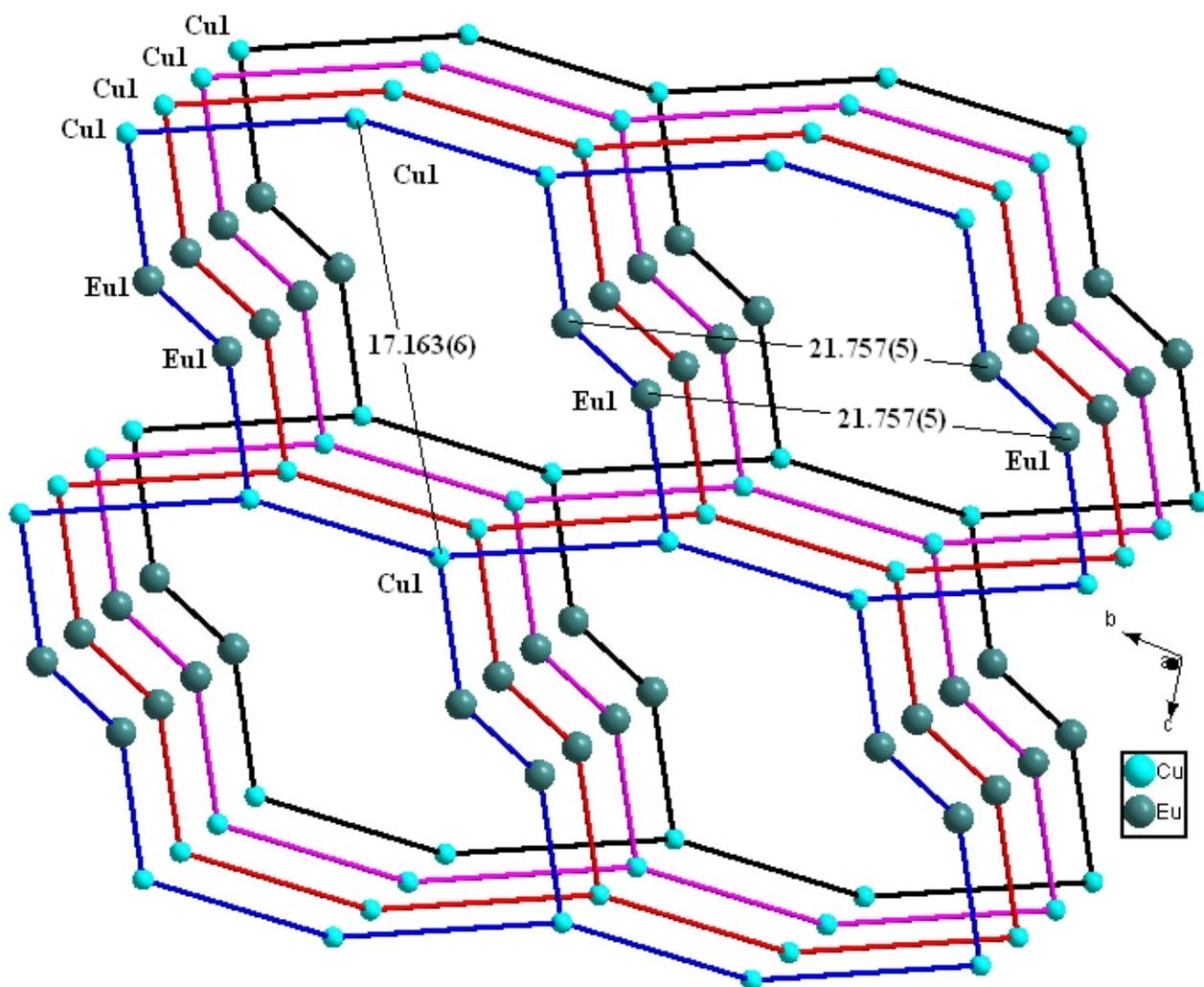


ESI 1 AAAA-stacked layers structures containing decanuclear connecting nodes with the dimension of $21.602(4) \times 16.973(5) \text{ \AA}^2$ for **1**. (pydc and bpy ligands are both substituted by a connection between metals)

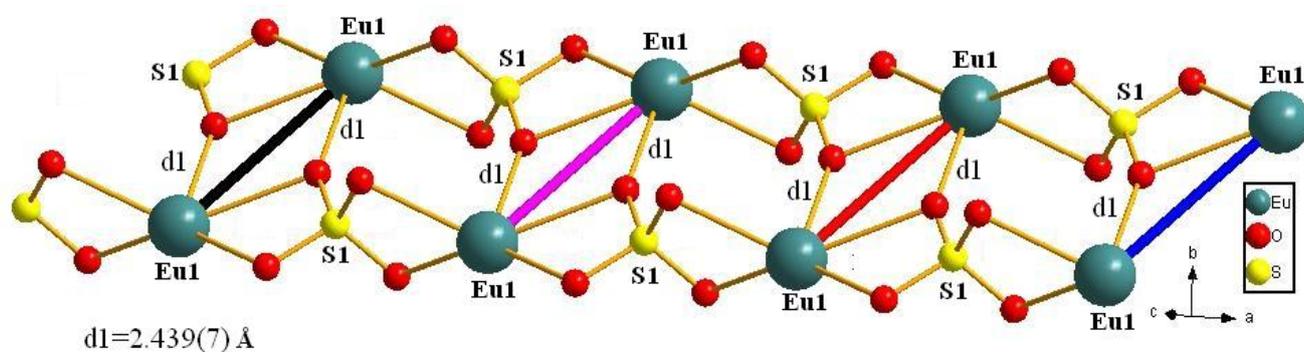


ESI 2 The ladder-like chains with a same mesh size in **1**

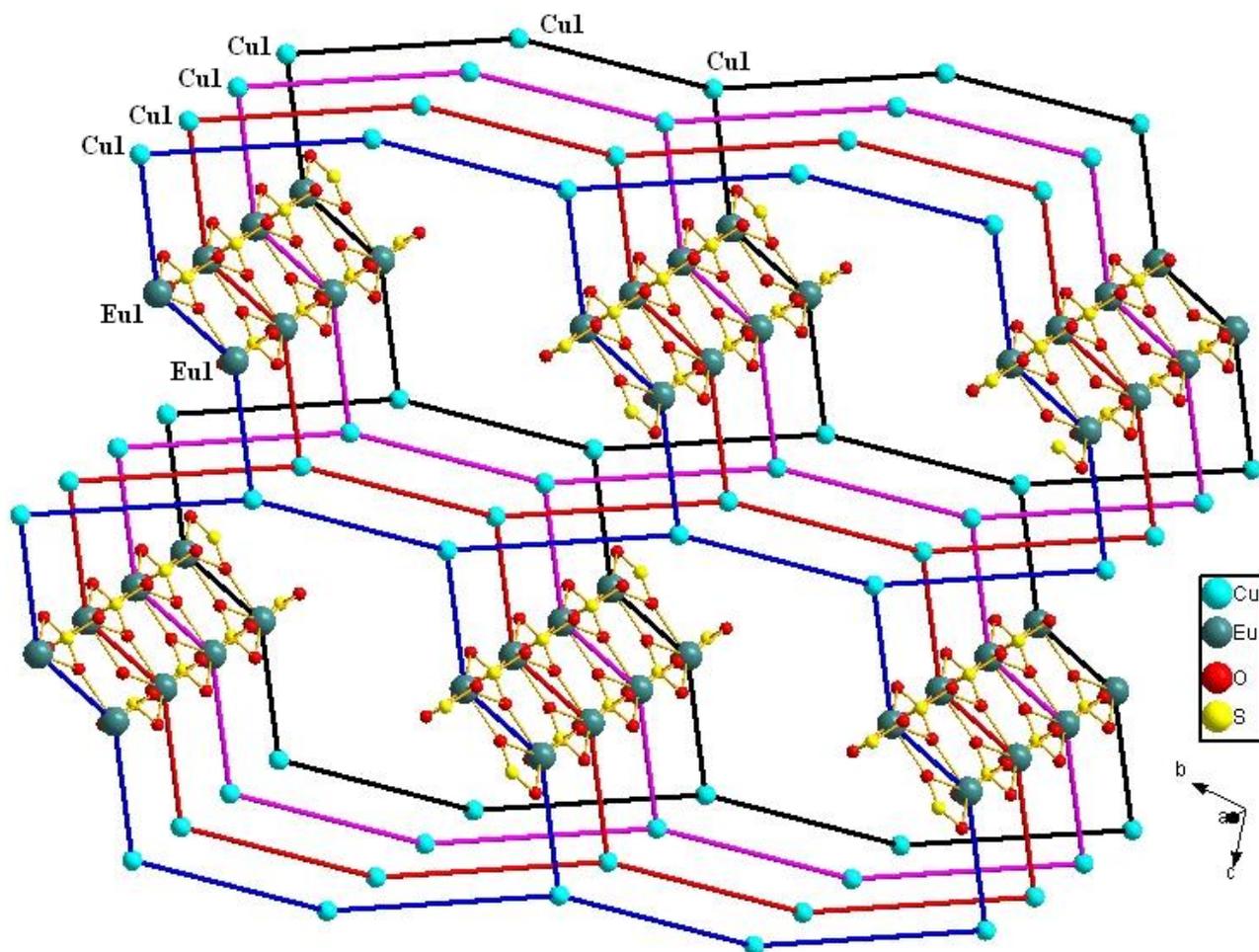




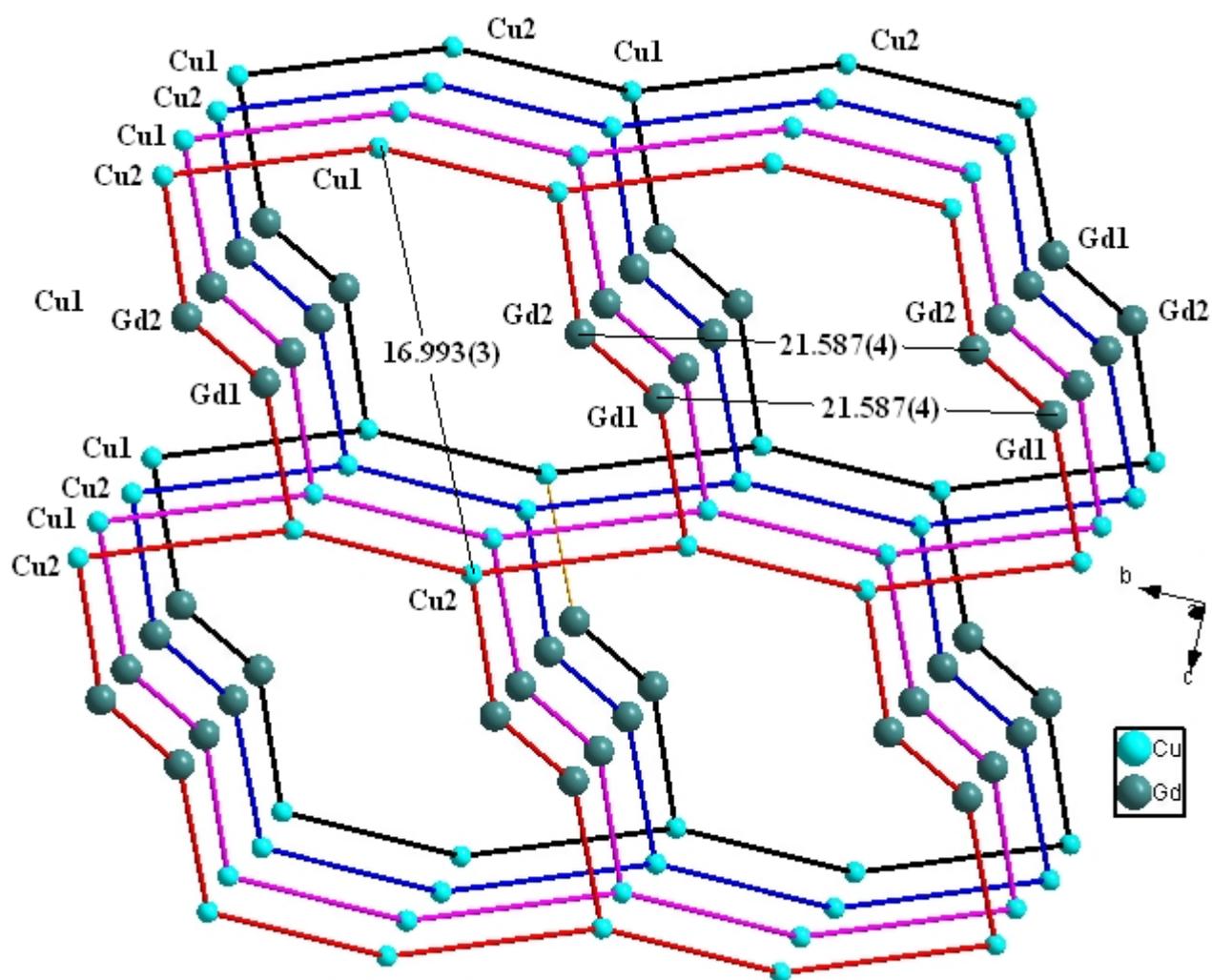
ESI 4 AAAA-stacked layers structures containing decanuclear connecting nodes with the dimension of $21.757(5) \times 17.163(6) \text{ \AA}^2$ for **2** (pydc and bpy ligands are both substituted by a connection between metals)



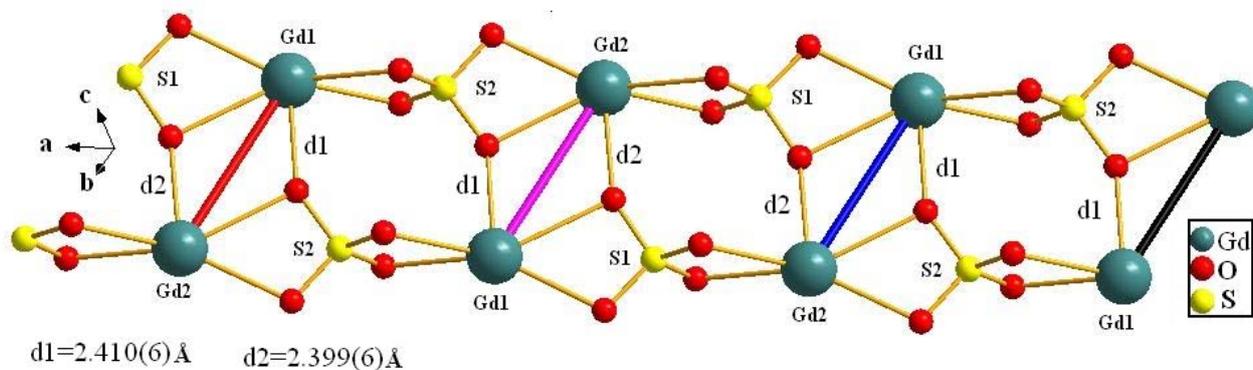
ESI 5 The ladder-like chains with a same mesh size in **2**



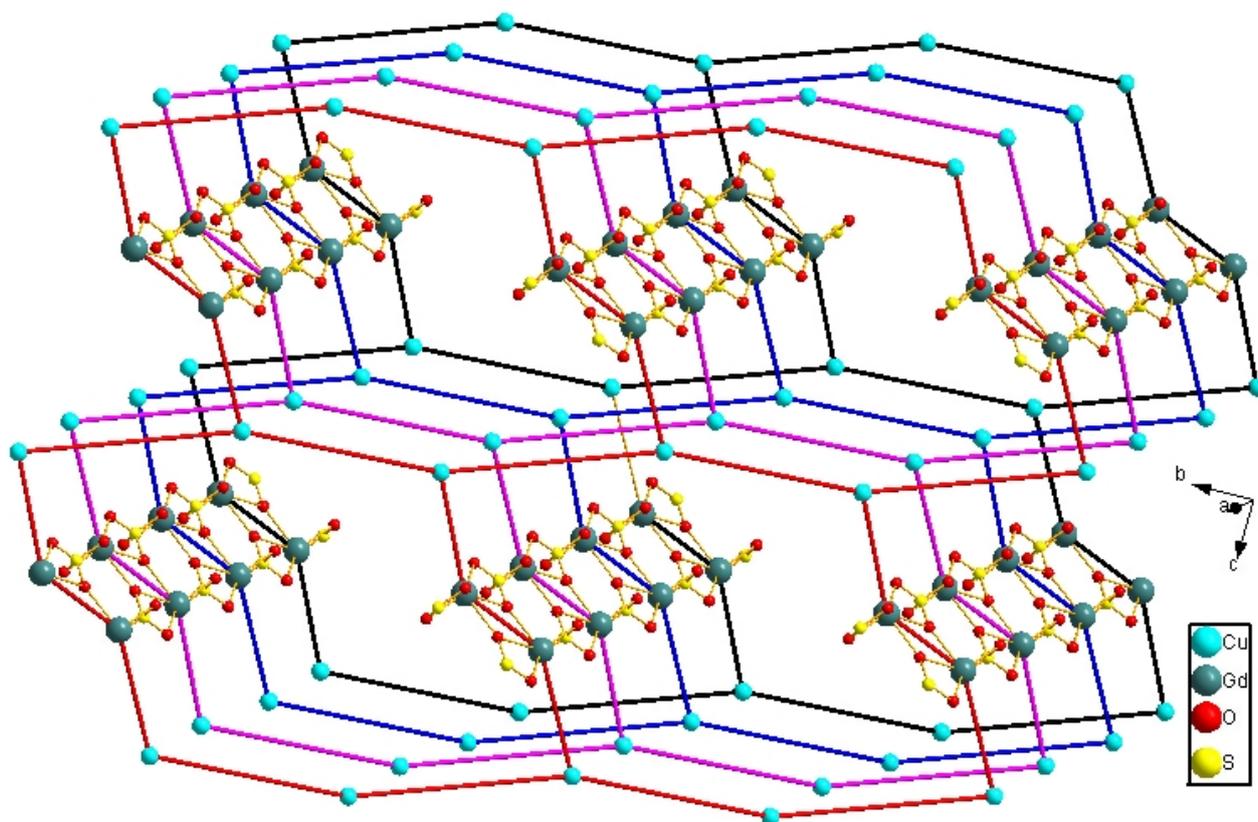
ESI 6 AAAA-stacked layers structures interlinked by the ladder-like chains for **2** (pydc and bpy ligands are both substituted by a connection between metals)



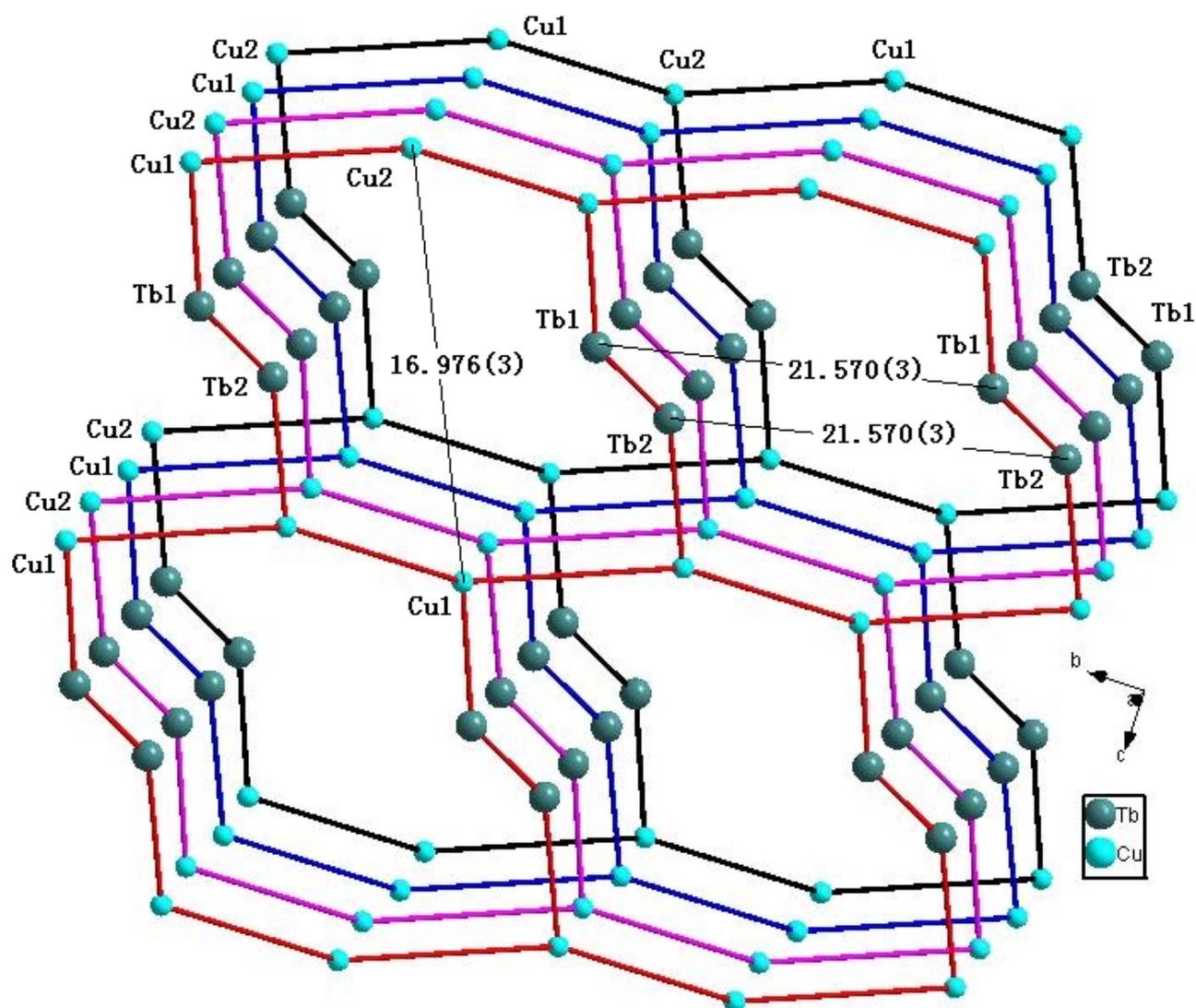
ESI 7 ABAB-stacked bilayers structures containing decanuclear connecting nodes with the dimension of $21.587(4) \times 16.993(3) \text{ \AA}^2$ for **3** (pydc and bpy ligands are both substituted by a connection between metals)



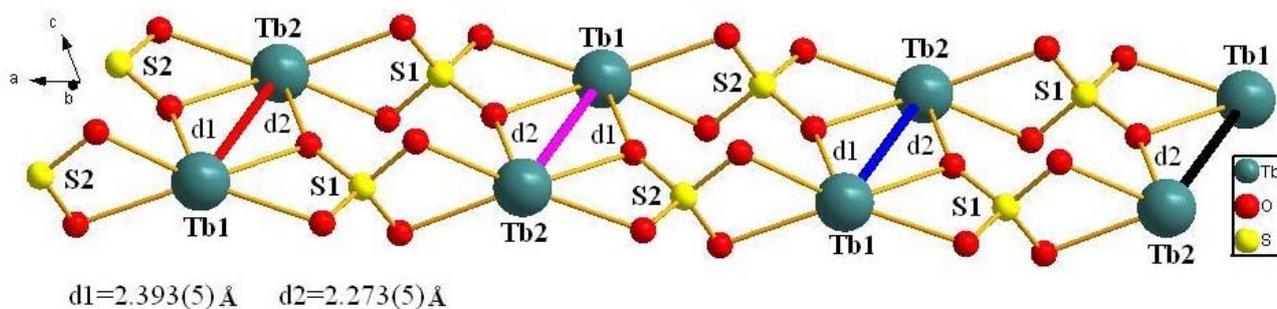
ESI 8 The ladder-like chains with a different mesh size in **3**



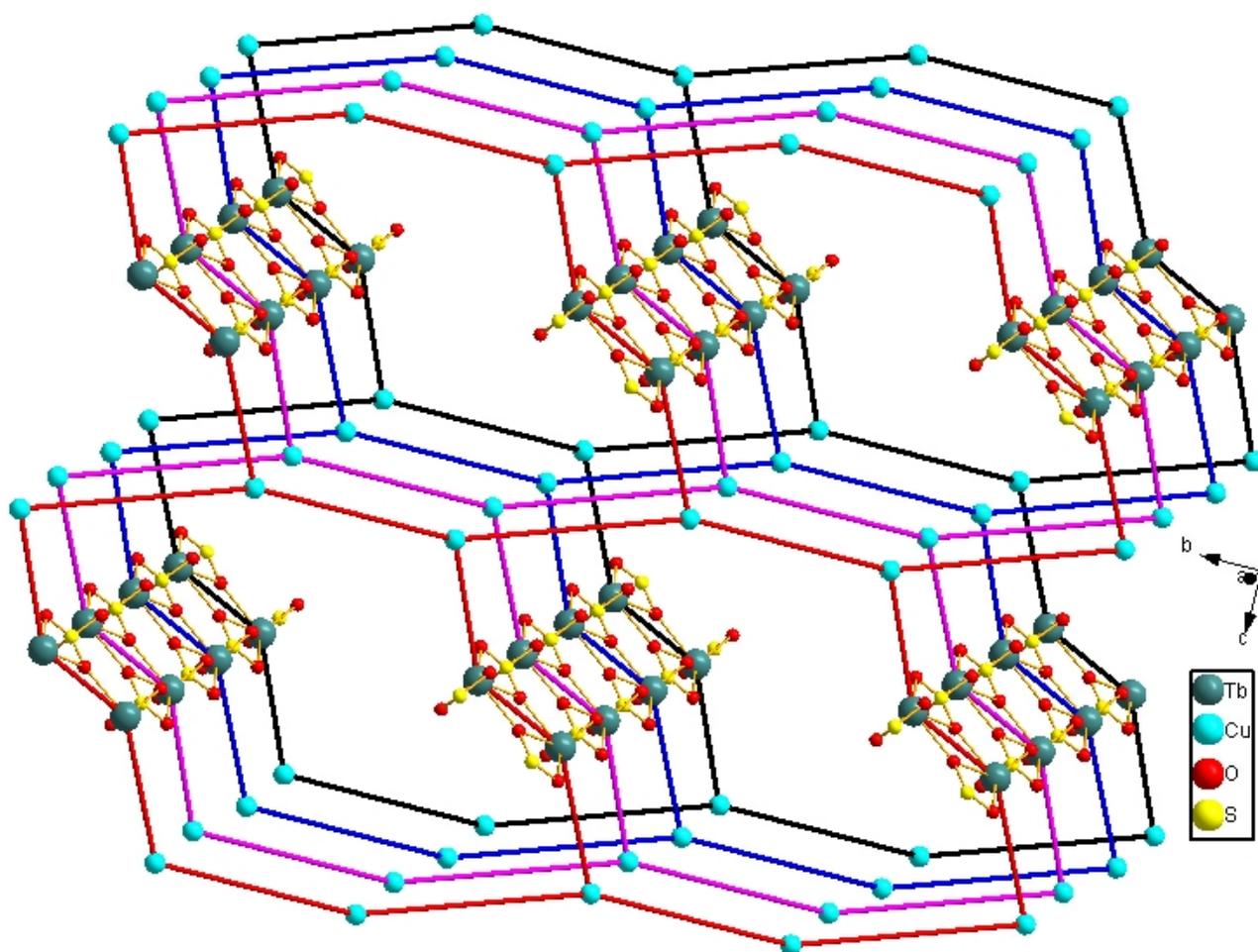
ESI 9 ABAB-stacked bilayers structures interlinked by the ladder-like chains for **3**. (pydc and bpy ligands are both substituted by a connection between metals)



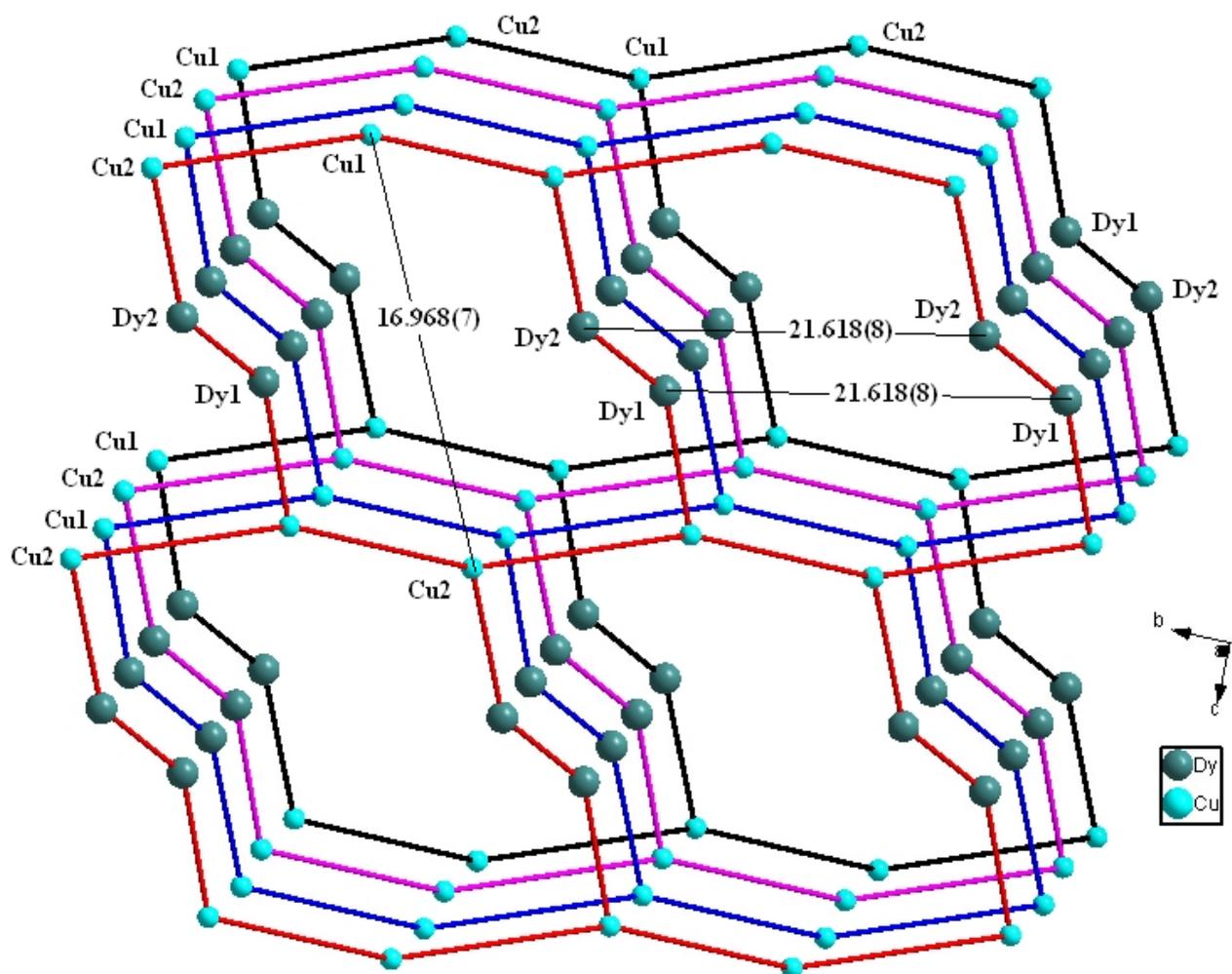
ESI 10 ABAB-stacked bilayers structures containing decanuclear connecting nodes with the dimension of $21.570(3) \times 16.976(3) \text{ \AA}^2$ for **4** (pydc and bpy ligands are both substituted by a connection between metals)



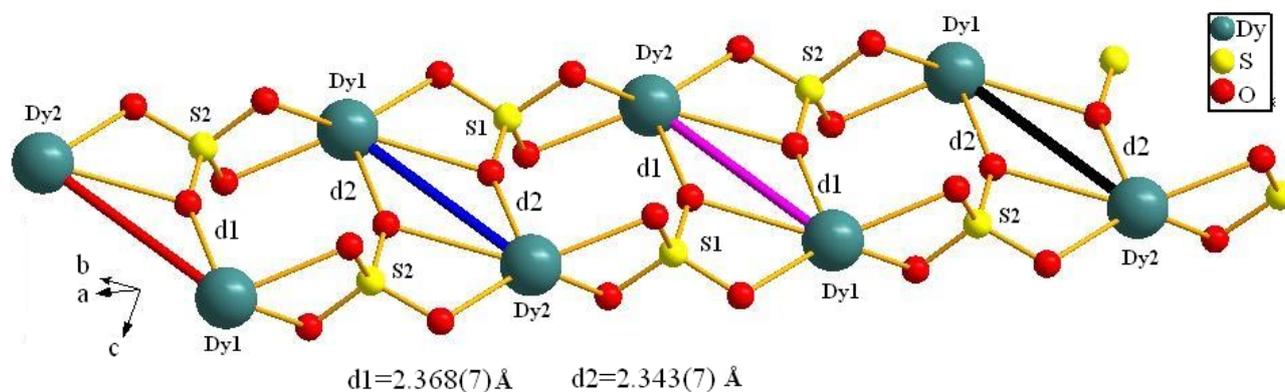
ESI 11 The ladder-like chains with a different mesh size in **4**



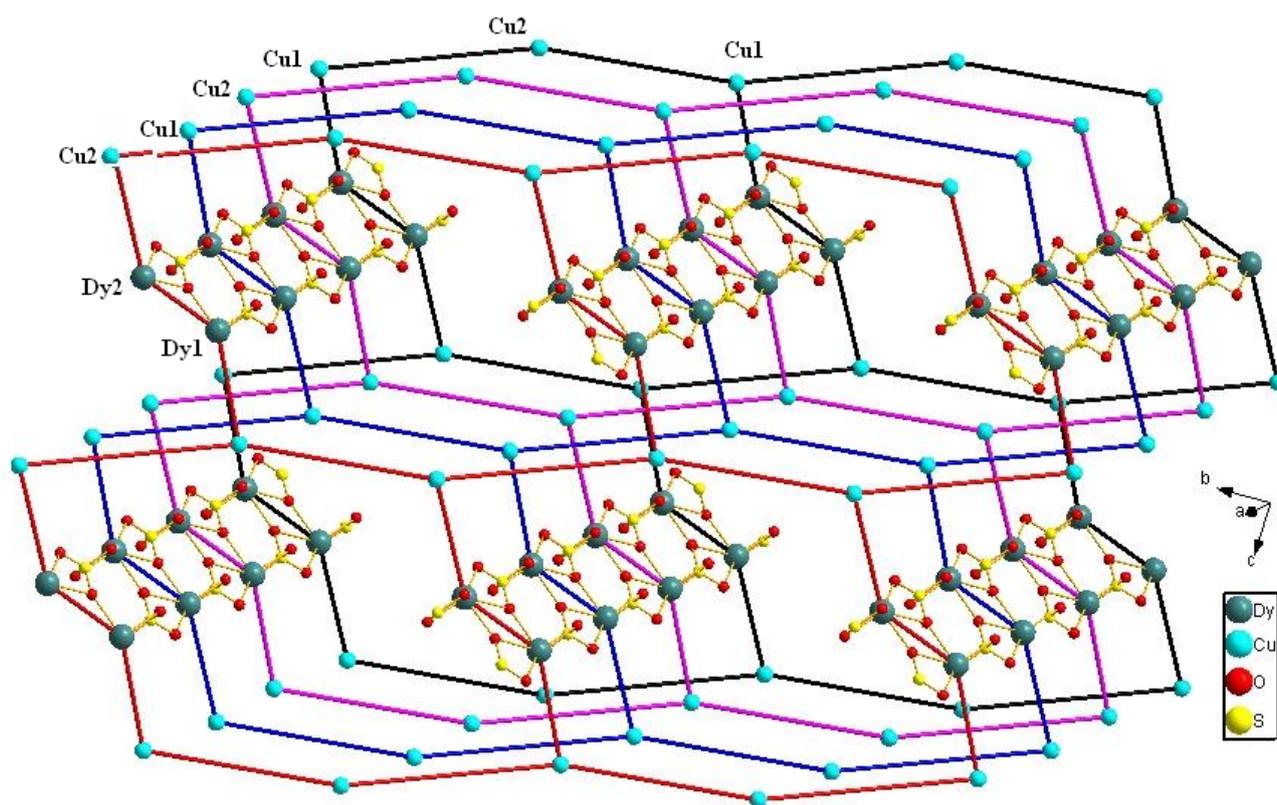
ESI 12 ABAB-stacked bilayers structures interlinked by the ladder-like chains for **4**. (pydc and bpy ligands are both substituted by a connection between metals)



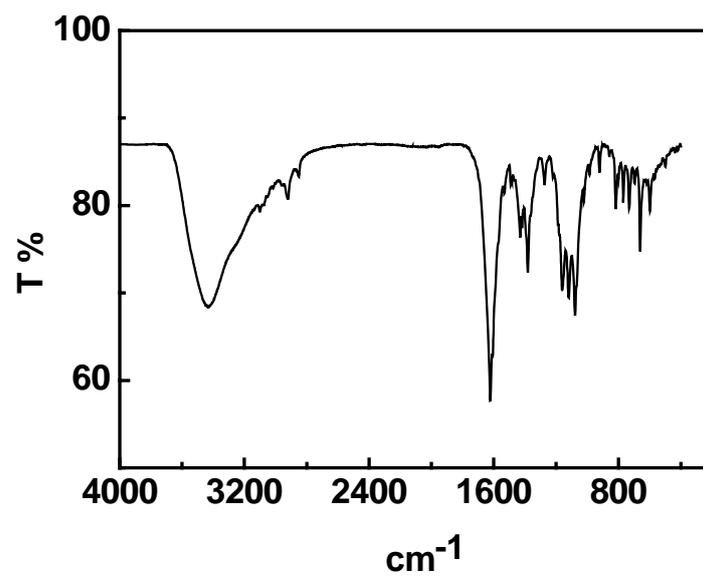
ESI 13 ABAB-stacked bilayers structures containing decanuclear connecting nodes with the dimension of $21.618(8) \times 16.968(7) \text{ \AA}^2$ for **5** (pydc and bpy ligands are both substituted by a connection between metals)



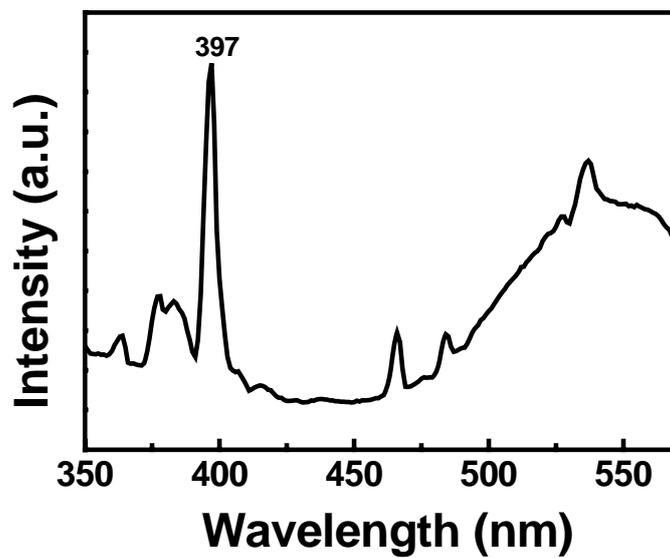
ESI 14 The ladder-like chains with a different mesh size in **5**



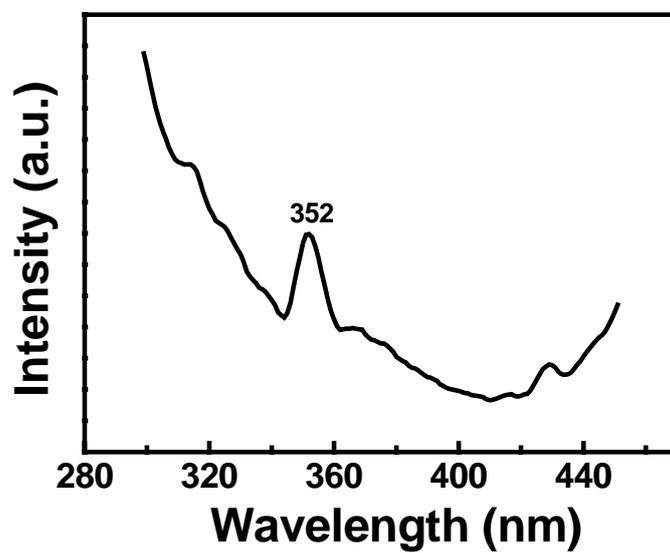
ESI 15 ABAB-stacked bilayers structures interlinked by the ladder-like chains for **5**. (pydc and bpy ligands are both substituted by a connection between metals)



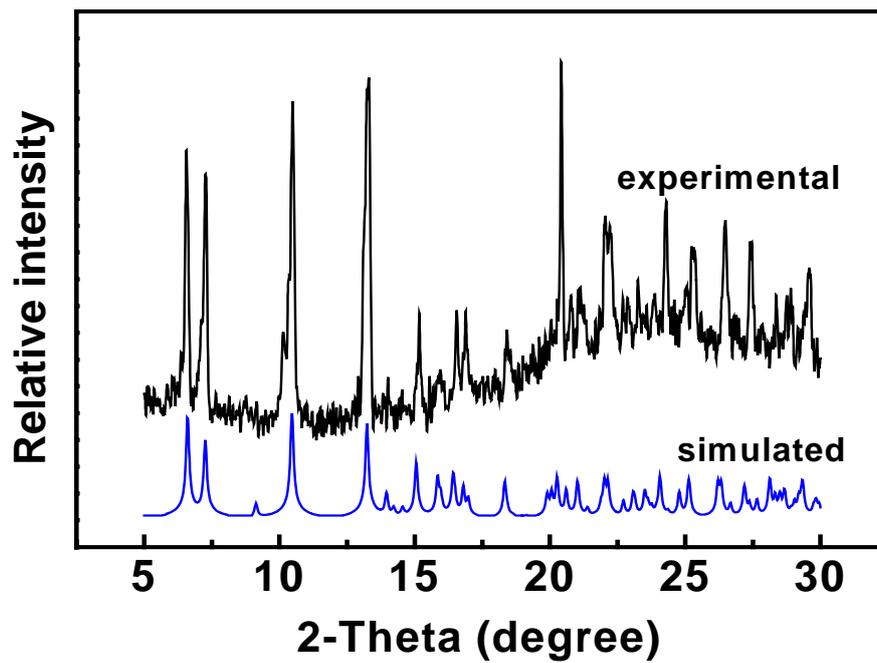
ESI 16 FT-IR spectra for **1**



ESI 17 Solid-state excitation spectrum for **2** at room temperature



ESI 18 Solid-state excitation spectrum for **4** at room temperature



ESI 19 Simulated and experimental powder X-ray diffraction patterns for 2.