Electronic Supplementary Material (ESI) for RSC Advances.

Uranium(VI) complexes with isonicotinic acid: from monomer to 2D polymer with unique U-N bonding

Yingjie Zhang [a,*], Inna Karatchevtseva [a], Jason R. Price [b], Igor Aharonovich [c], Fatima Kadi [a], Gregory R. Lumpkin [a] and Feng Li [d]

[a] *Australian Nuclear Science and Technology Organisation, Locked Bag 2001, Kirrawee DC, NSW 2232, Australia*

[b] *Australian Synchrotron, 800 Blackburn Road, Clayton, VIC 3168, Australia*

[c] *School of Physics and Advanced Materials, University of Technology Sydney, Ultimo, New South Wales 2007, Australia*

[d] *School of Science and Health, University of Western Sydney, Locked Bag 1797, Penrith, NSW 2751, Australia.*

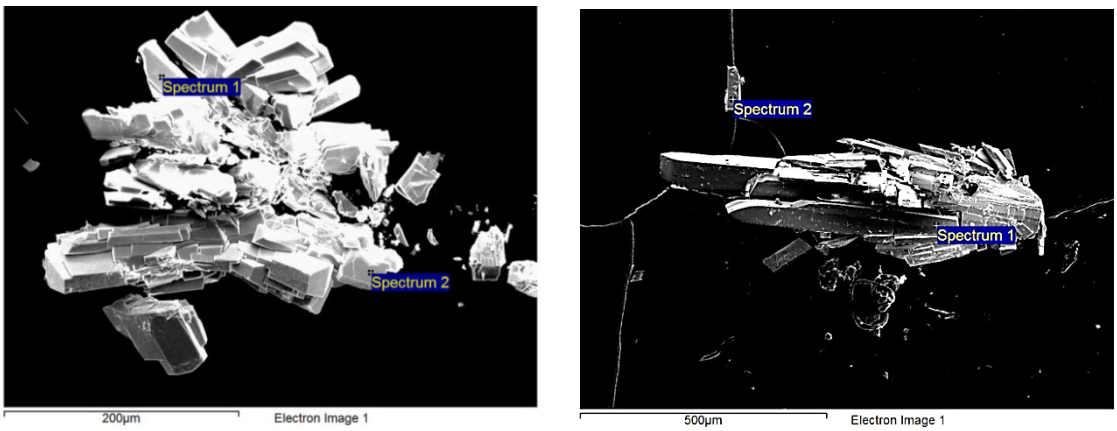

Fig. S1. Secondary SEM images of **1** (left) and **2** (right).

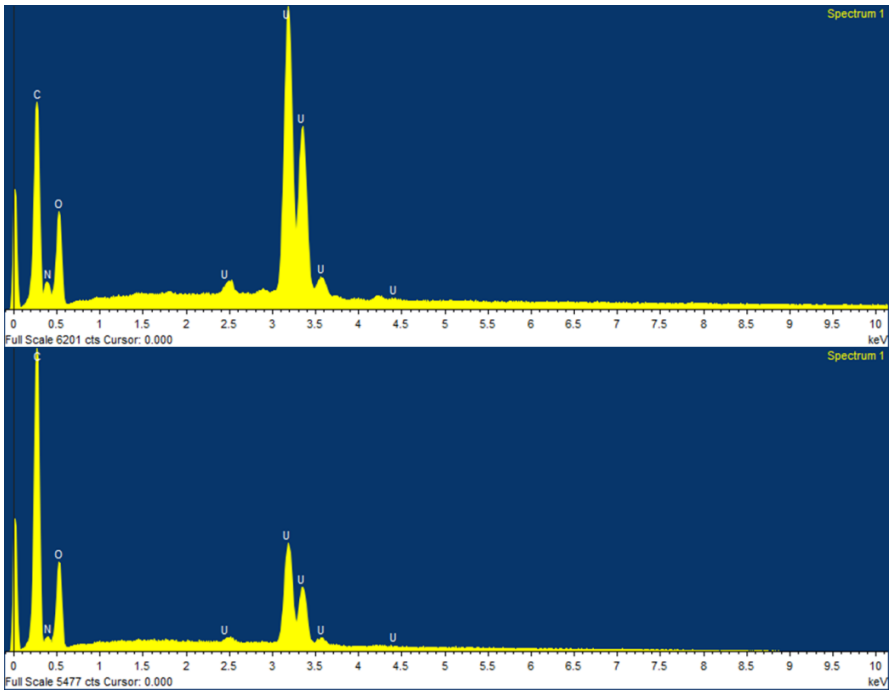

Fig. S2. SEM-EDS spectra of **1** (top) and **2** (bottom) collected on relatively flat crystal surfaces.

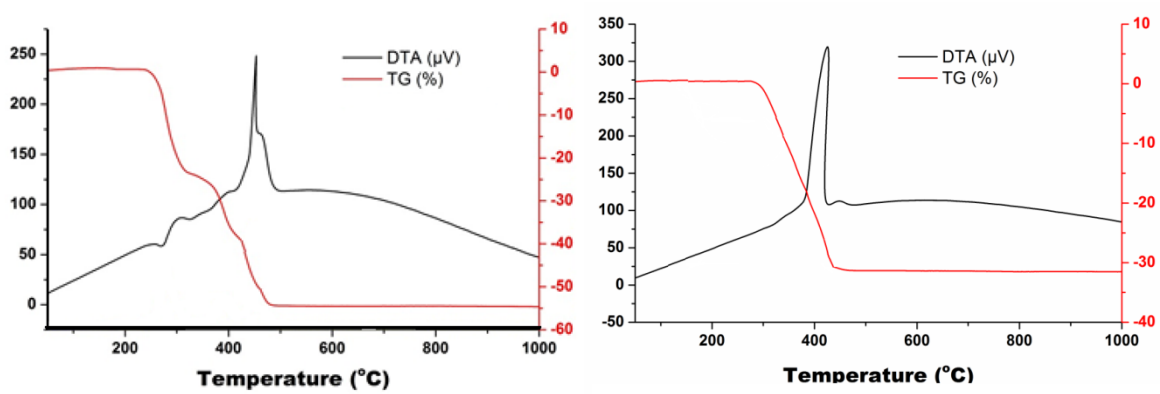

Fig. S3. Thermogravimetric and differential thermal analysis results for **1** (left) and **2** (right).

Table S1. Raman bands and assignments for **1** and **2**.

Complex 1 **Peaks position, cm^{-1}**	**Complex 2** **Peaks position, cm^{-1}**	**Assignment**
1629 w and 1524 w	1525	ν_{as} (COO^-)
1612,1575, and ~1498 m-w	1616, 1568, and 1499 m-w	ν (CC + CN)
1403	1409 m	ν_s (COO^-)
1372 m		ν_{as} (N–O) in NO_3^-
	1220 w	δ (U–O–H)
1158 m	1161 m	ν (C_{py}–C_{coo-}), δ $(CH)_{ring}$
1070 vw		ν_s ((N–O) in NO_3^-
1053 w	1060 w	ν $(CC)_{ring}$ and δ $(CH)_{ring}$
1017 m	1023 m	Pyridine ring in-plane bending vibrations
993 br, sh		ν (N–O)
868 vw	890	δ $(CH)_{ring}$ out-of-plane bending vibrations
828 vs	833	ν_s $(UO_2)^{2+}$ symmetric stretch
684 w	686 w	δ (COO^-) in-plane bending vibrations
663 w	666 w	Pyridine ring out-of-plane bending vibrations, δ$(CH)_{ring}$
653 w		δ (ONO)
467 vw	442 vw	δ (COO^-) out-of-plane bending vibrations
424 vw		Pyridine ring bending vibrations
371 w, br,		ν (U–O_{ligand}), δ (C–O–U)
	333 vw	ν (U–N)
286 w	279 w	δ $(UO_2)^{2+}$ and δ (U–O_{ligand}) bending vibrations
235 m	234 m	δ (COO^-) torsional vibrations
≤ 200		Lattice modes

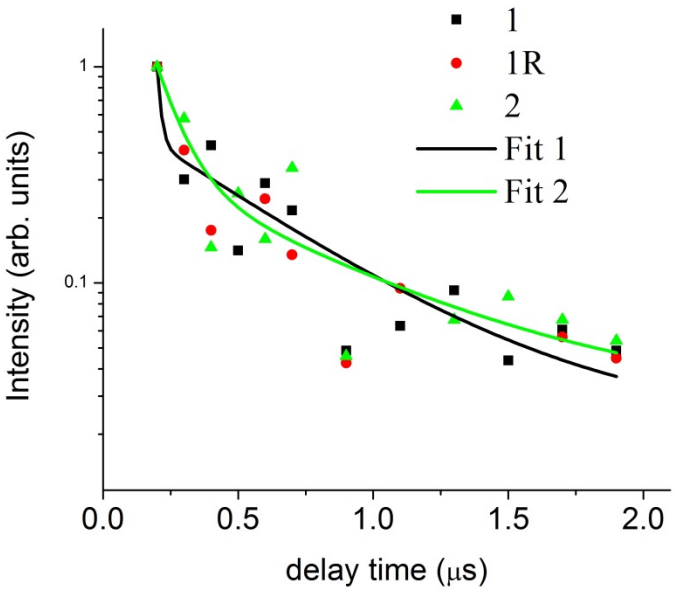

Fig. S4. Fluorescence lifetime measurements for **1** and **2**.