Supporting Information for

Two Uranyl Heterocyclic Carboxyl Compounds with Fluorescent Properties as High Sensitivity and Selectivity Optical Detectors for Nitroaromatics

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Supplementary Index

1. Infrared Spectra

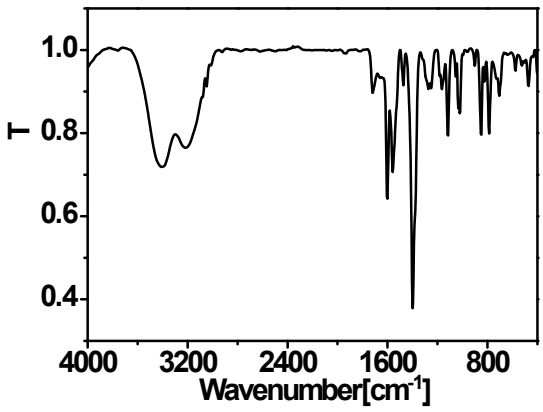
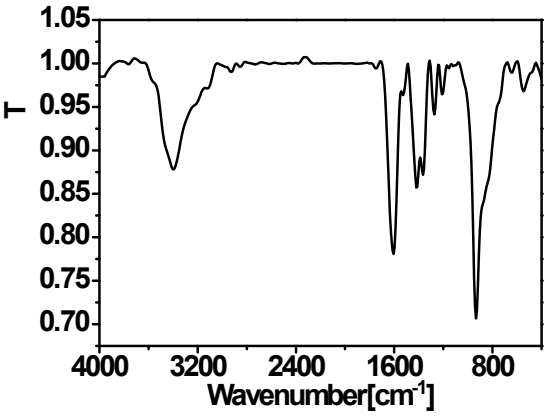
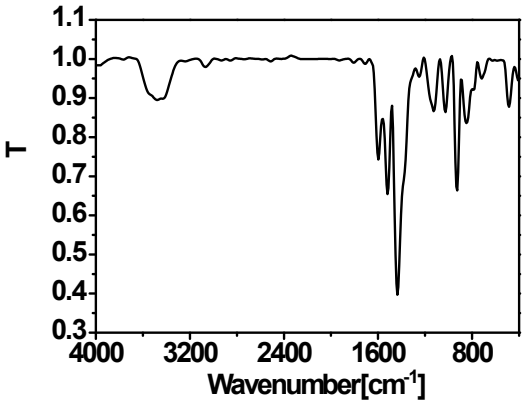


Figure S1. IR spectrum of the ligand HL_2



(a)



(b)

Figure S3. IR spectra of compounds: (a) for **1**, (b) for **2**.

2. The figure of structure

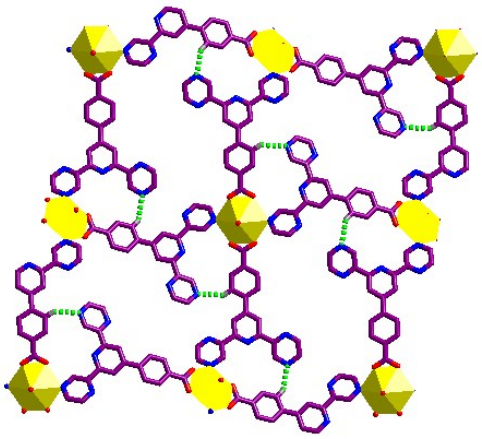
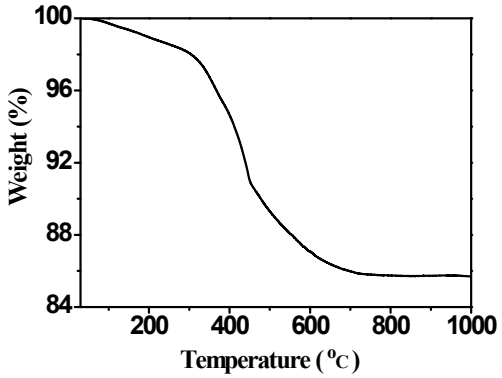
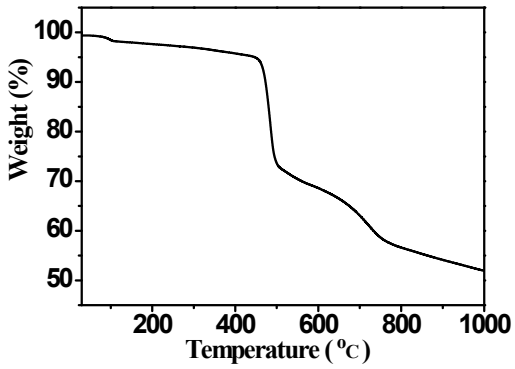


Figure S2. 2D of the compound **2** with the hydrogen bonds of C4-H4···N3.

3. TG analyses



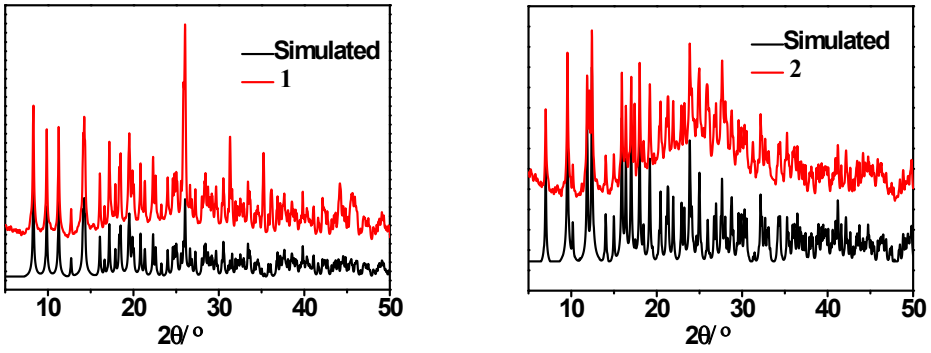
(a)



(b)

Figure S4. TG curves of compuonds: (a) for **1**, (b) for **2**.

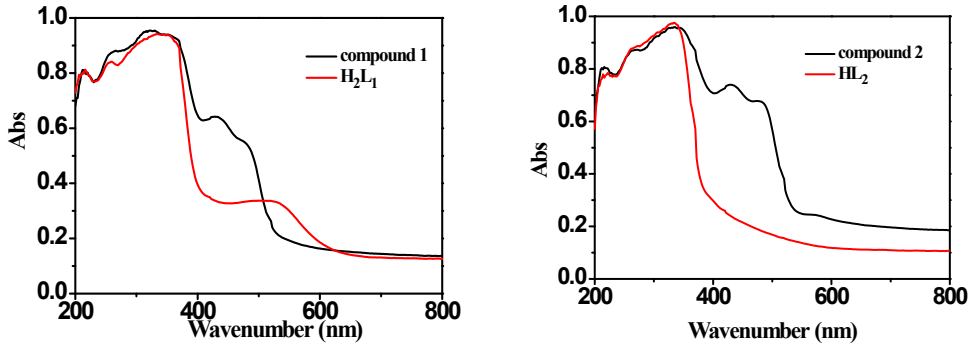
4. PXRD



(a) (b)

Figure S5. Powder X-ray diffraction patterns for compounds**:** (a) for **1**, (b) for **2**.

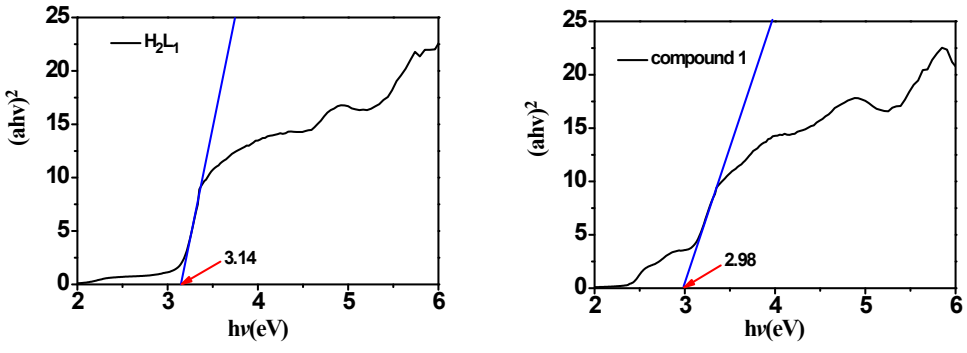
5. UV-vis Spectra



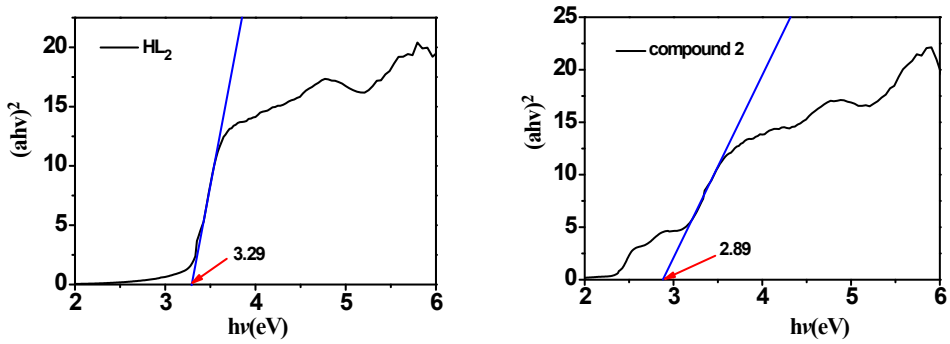
(a) (b)

Figure S6. Solid-state UV-vis absorption spectra: (a) for compound **1**, (b) for compound **2**.

6. Band gap



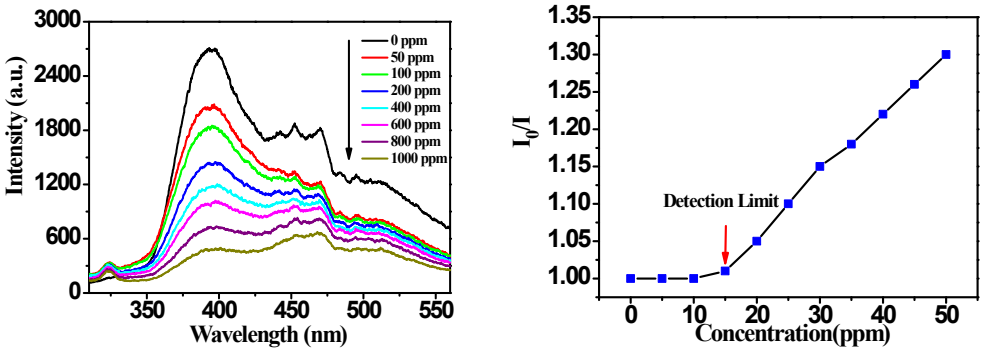
(a) (b)



(c) (d)

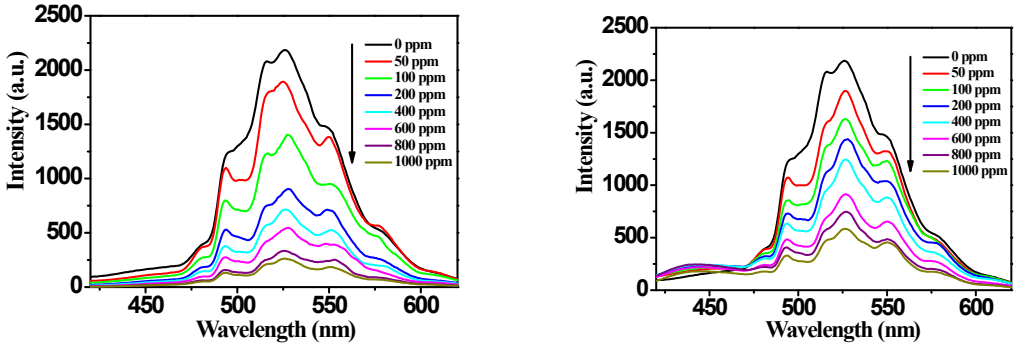
Figure S7. The band gap of the ligands and the two compounds:(a) for H_2L_1, (b) for **1**, (c) for HL_2, (d) for **2**.

7. Fluorescence Spectroscopy

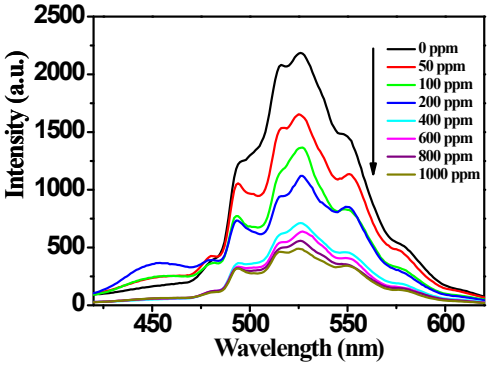


(a) (b)

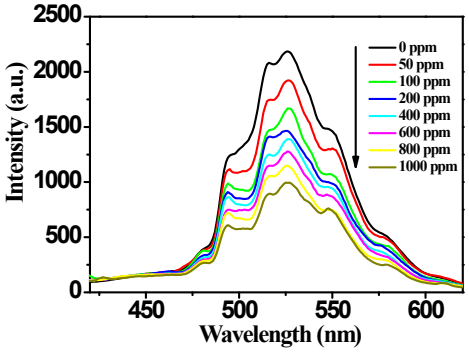
Figure S8. (a) Luminescence quenching of **2** dispersed in H_2O by gradually increasing TNP concentration; (b) the detection limit of TNP for **2**.



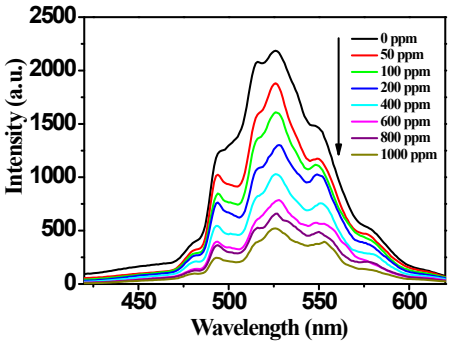
(a) (b)



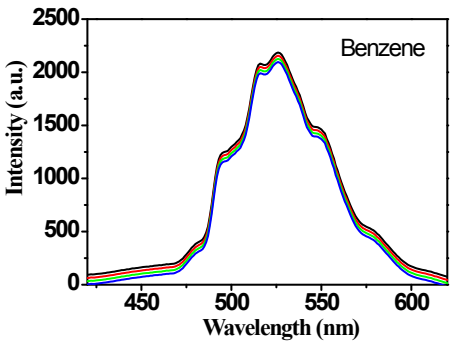
(c)



(d)

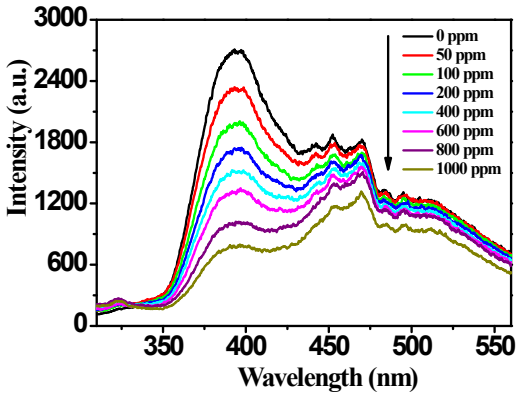


(e)

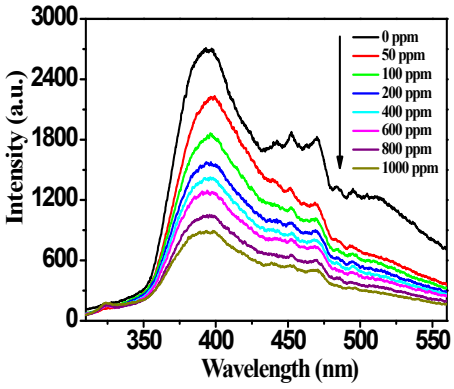


(f)

Figure S9. Luminescence quenching of compound **1** dispersed in H_2O by gradually increasing different quenchers' concentration: (a) DNT, (b) p-Nitroaniline, (c) m-Dinitrobezene, (d) sodium nitrobenzene sulfonate, (e) NB, (f) Benzene.



(a)



(b)

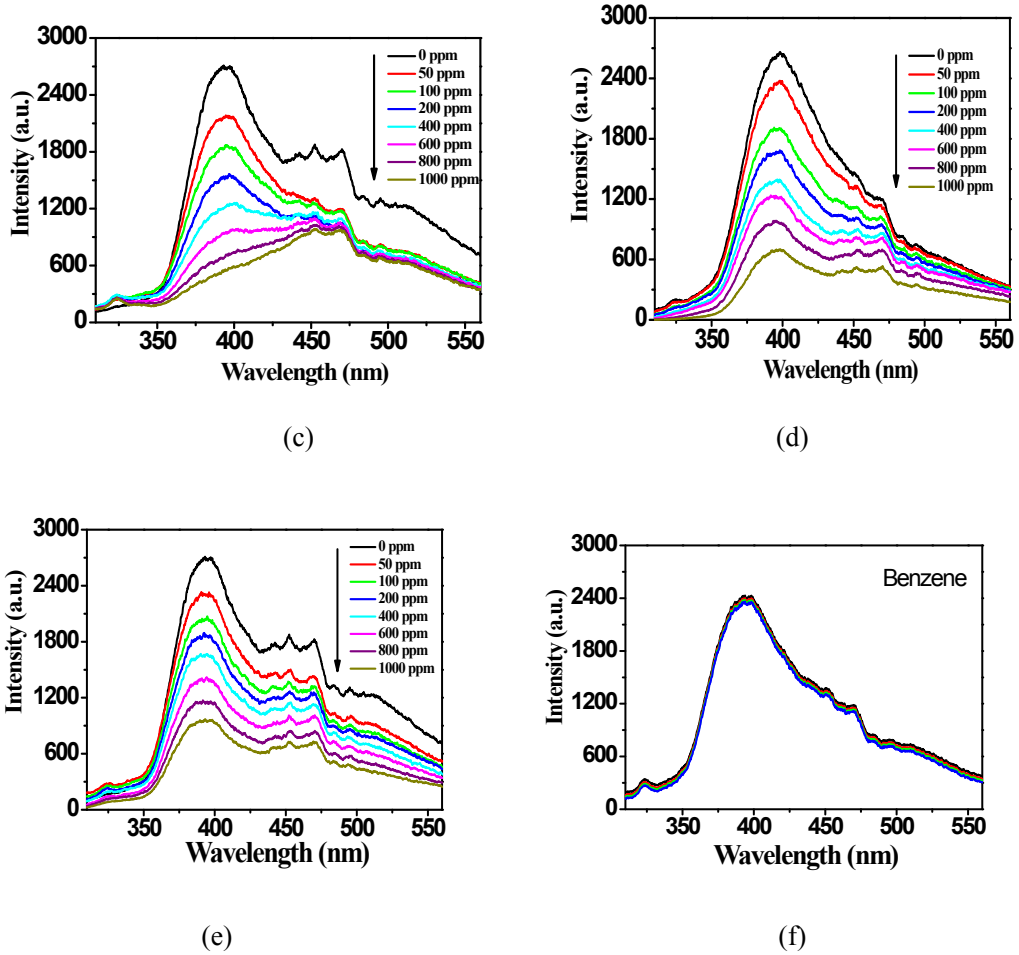


Figure S10 Luminescence quenching of compound **2** dispersed in H_2O by gradually increasing different quenchers' concentration: (a) DNT, (b) p-Nitroaniline, (c) m-Dinitrobezene, (d) sodium nitrobenzene sulfonate, (e) NB, (f) Benzene.

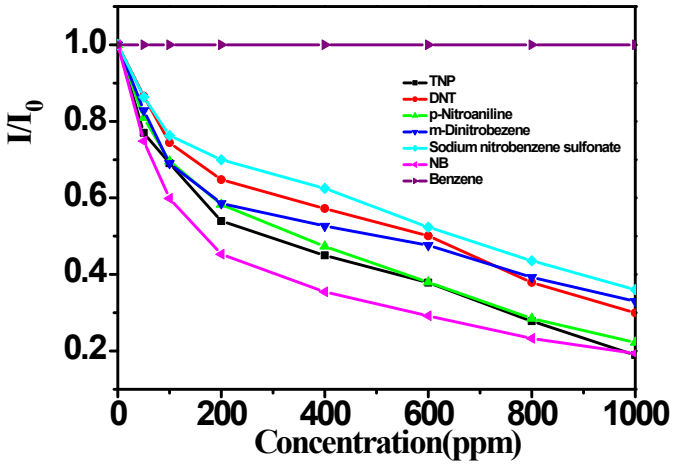
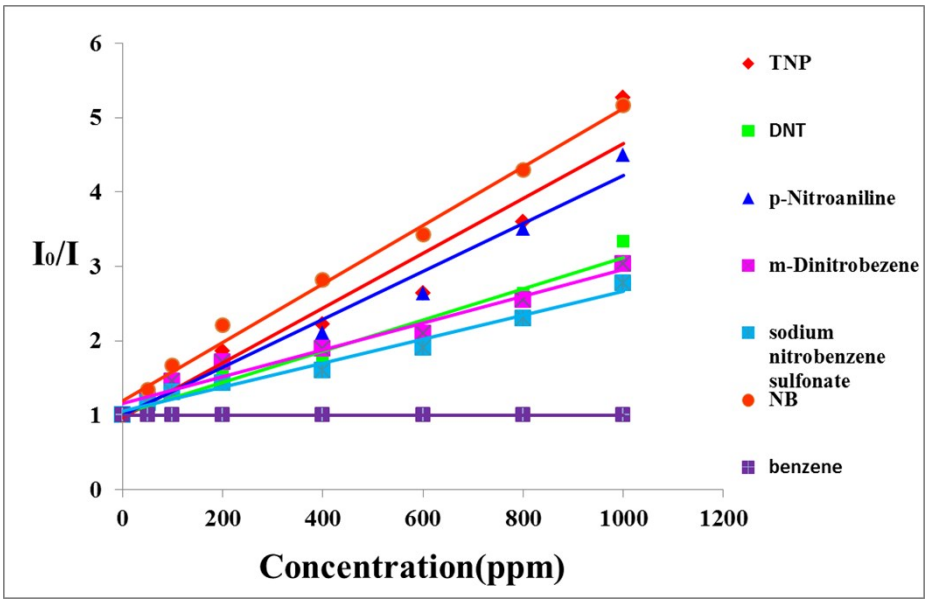
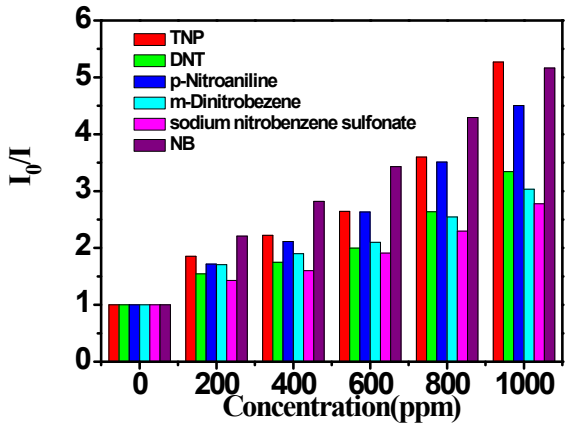


Figure S11. Plot of fraction of luminescence intensity of **2** vs. concentration of analytes. I_0 and I are the luminescence intensities in the absence and presence of nitroaromatics, respectively.



(a)



(b)

Figure S12. For **2**, (a) linear relationships of the quenching are fluorescence intensity ratio and quencher concentration; (b) at different concentrations, the value of the fluorescence intensities and the quencher ratios.

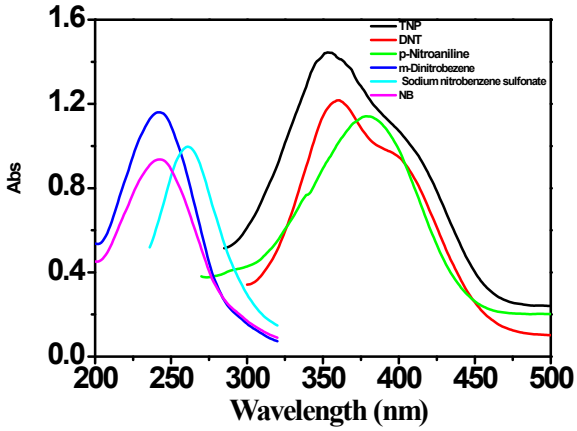


Figure S13. UV absorption of different quenchers with compound **2**: TNP, DNT, p-Nitroaniline, m-Dinitrobezene, Sodium nitrobenzene sulfonate and NB, respectively.

8. Table for bond angles

Table S1. The main bond lengths (Å) and angles (deg) for compounds **1** and **2***

compound **1**					
U(1)-O(1)$^{\#1}$	1.766(7)	U(1)-O(2)	2.326(6)	U(1)-O(3)$^{\#2}$	2.402(12)
U(1)-O(4)$^{\#2}$	2.837(12)				
O(1)$^{\#1}$-U(1)-O(1)	179.998(1)	O(3)$^{\#3}$-U(1)-O(4)$^{\#2}$	134.8(4)	O(2)-U(1)-O(3)$^{\#2}$	106.5(4)
O(1)-U(1)-O(4)$^{\#3}$	105.2(3)	O(2)-U(1)-O(4)$^{\#3}$	112.7(3)	O(1)-U(1)-O(3)$^{\#2}$	95.7(4)
O(1)-U(1)-O(2)	90.9(3)	O(1)-U(1)-O(2)$^{\#1}$	89.1(3)	O(1)-U(1)-O(3)$^{\#3}$	84.3(4)
O(1)-U(1)-O(4)$^{\#2}$	74.8(3)	O(2)-U(1)-O(3)$^{\#3}$	73.5(4)	O(2)-U(1)-O(4)$^{\#2}$	67.3(3)
O(3)$^{\#3}$-U(1)-O(4)$^{\#2}$	45.2(4)				
compound **2**					
U(1)-O(1)	1.746(3)	U(1)-O(2)	2.440(3)	U(1)-O(3)	2.474(3)
U(1)-N(1)$^{\#2}$	2.699(3)				
O(1)$^{\#1}$-U(1)-O(1)	180.0	O(2)-U(1)-O(3)$^{\#1}$	127.44(10)	O(2)-U(1)-N(1)$^{\#3}$	115.57(11)
O(3)-U(1)-N(1)$^{\#2}$	115.42(10)	O(1)-U(1)-O(3)$^{\#1}$	94.10(14)	O(1)-U(1)-N(1)$^{\#3}$	95.26(14)
O(1)-U(1)-O(2)	93.22(14)	O(1)-U(1)-O(2)$^{\#1}$	86.78(14)	O(1)-U(1)-N(1)$^{\#2}$	84.74(14)
O(2)-U(1)-O(3)	52.56(10)	O(1)-U(1)-O(3)	85.90(14)	O(3)-U(1)-N(1)$^{\#3}$	64.58(10)
O(2)-U(1)-N(1)$^{\#2}$	64.43(11)				

Symmetry transformations used to generate equivalent atoms: for **1**: #1= -x, -y+1, -z+1; #2= -x+1, -y+1, -z+1; #3= x-1, y, z; for **2**:#1= -x+3, -y, -z; #2= -x+2, y-1/2, -z+1/2; #3= x+1, -y+1/2, z-1/2.