Electronic supplementary Information

Synthesis of tartrate – bridging rare – earth – containing polytungstoarsenate aggregates from an adaptive precursor $[As_2W_{19}O_{67}(H_2O)]^{14-}$

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Figure S1 The X–ray powder diffraction patterns of **1**–**6**

Figure S2 IR spectra of **1**–**6**.

Figure S3 The UV–vis spectra of **1**–**6** with 5×10^{-5} mol/L in aqueous solution.

Figure S4 The UV–vis spectra of **3** at different pH values.

Figure S5 The χ_M^{-1} *vs T* curves of **1**(a), **2**(b), **3**(c), **4**(d).

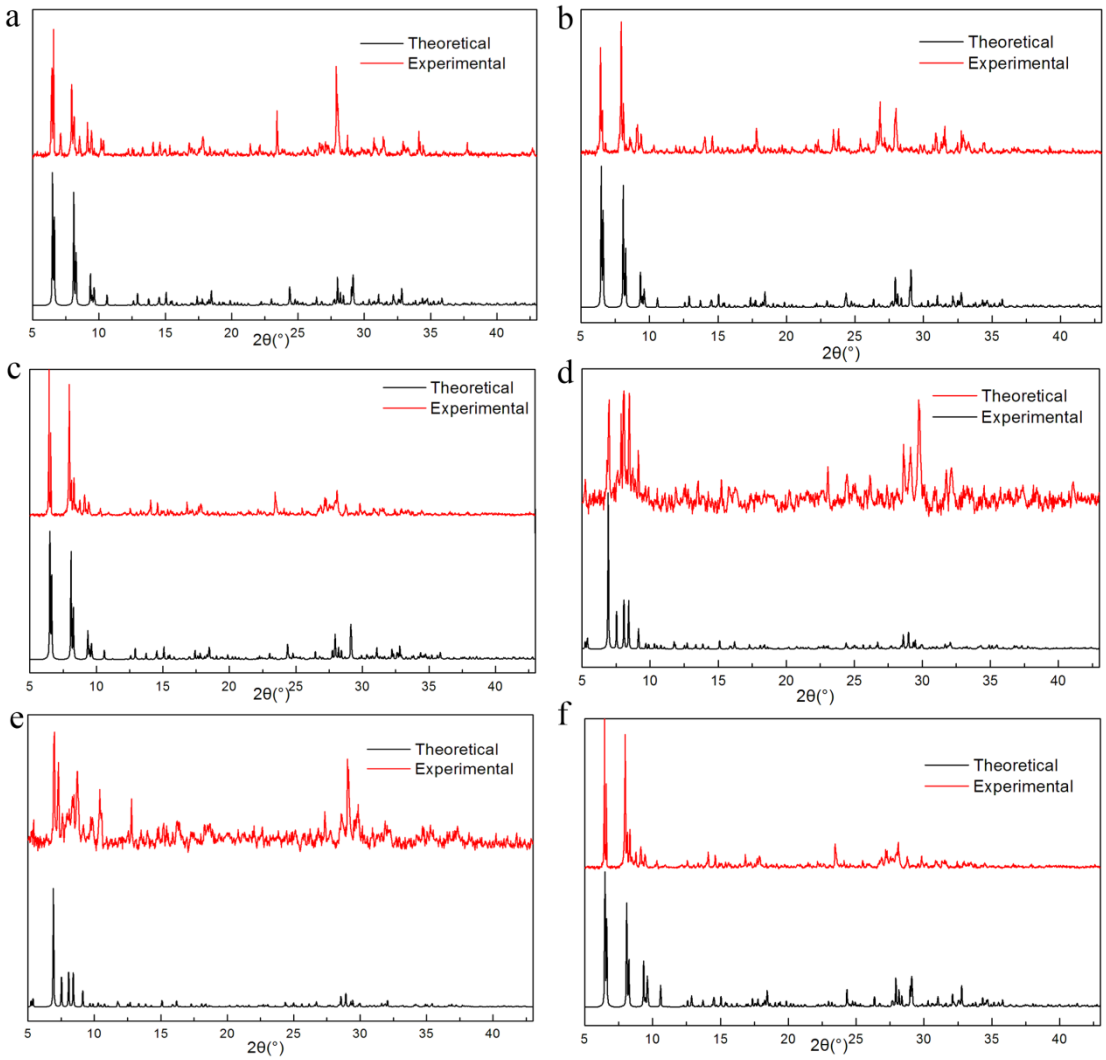

Figure S1. The X–ray powder diffraction patterns of **1**(a), **2**(b), **3**(c), **4**(d), **5**(e), **6**(f), and their calculated patterns based on the single–crystal solution.

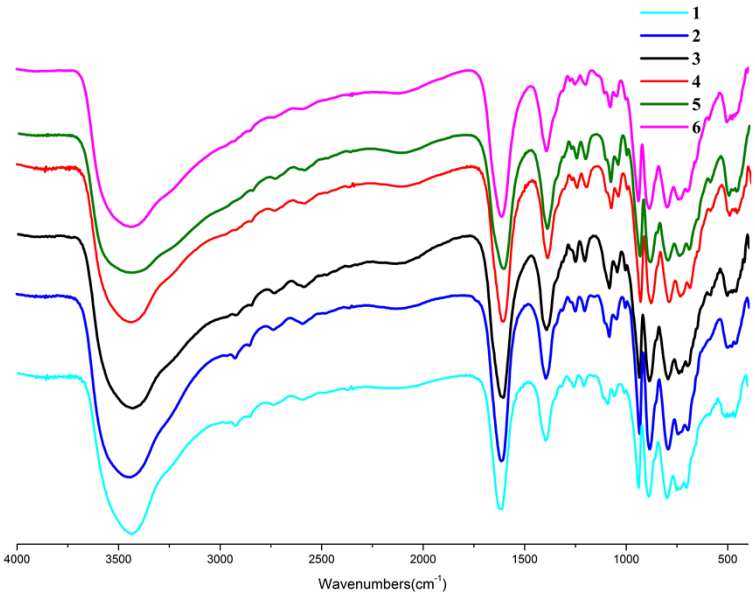

Figure S2. IR spectra of **1**–**6**.

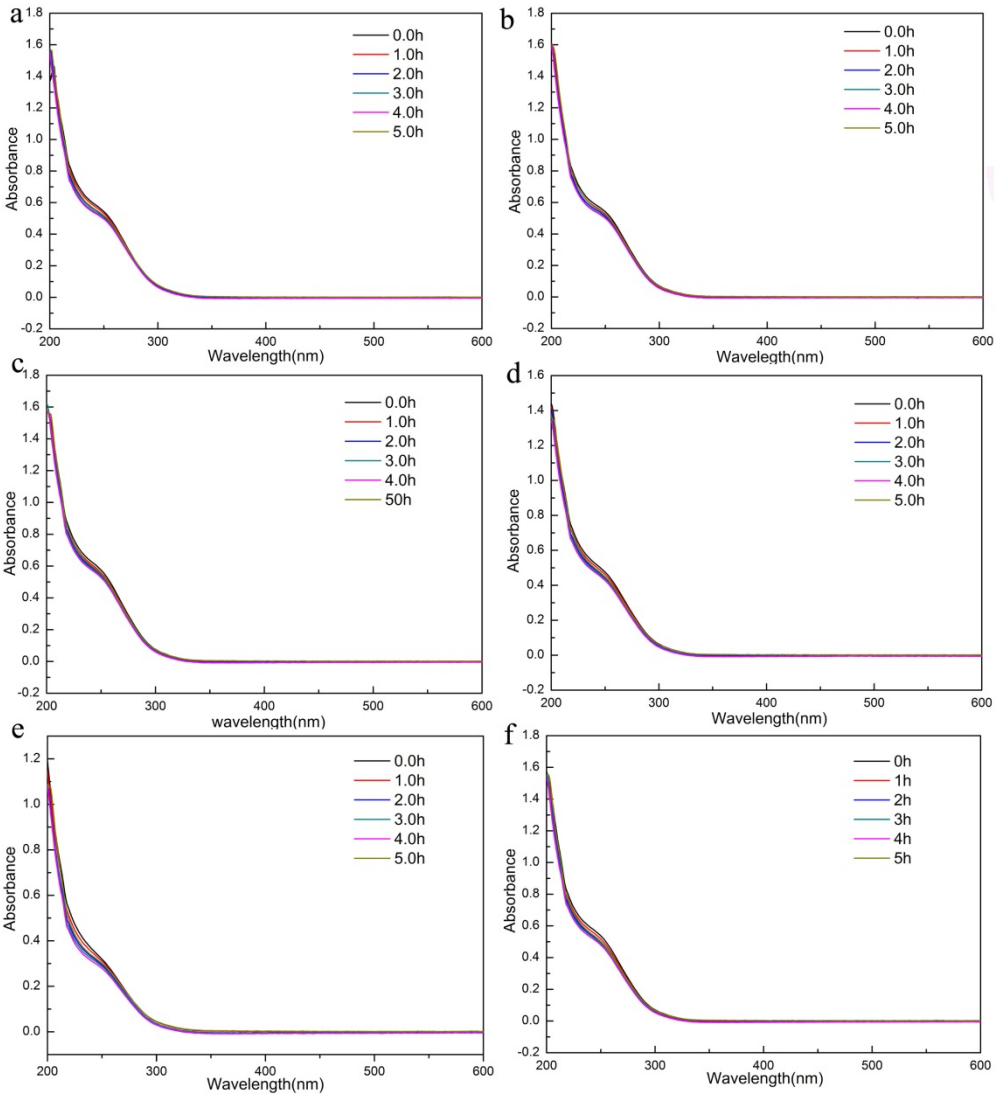

Figure S3. The UV–vis spectra of **1**(a), **2**(b), **3**(c), **4**(d), **5**(e), **6**(f) with 5×10^{-5} mol/L in aqueous solution.

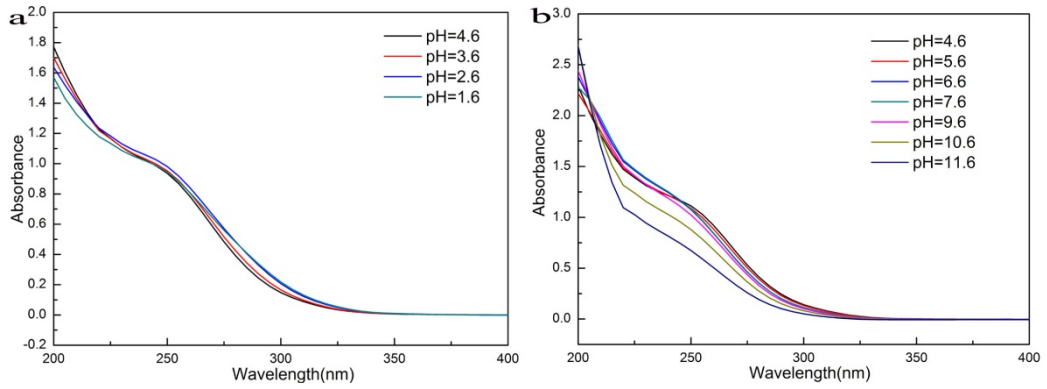

Figure S4. The UV–vis spectra of **3** at different pH values.

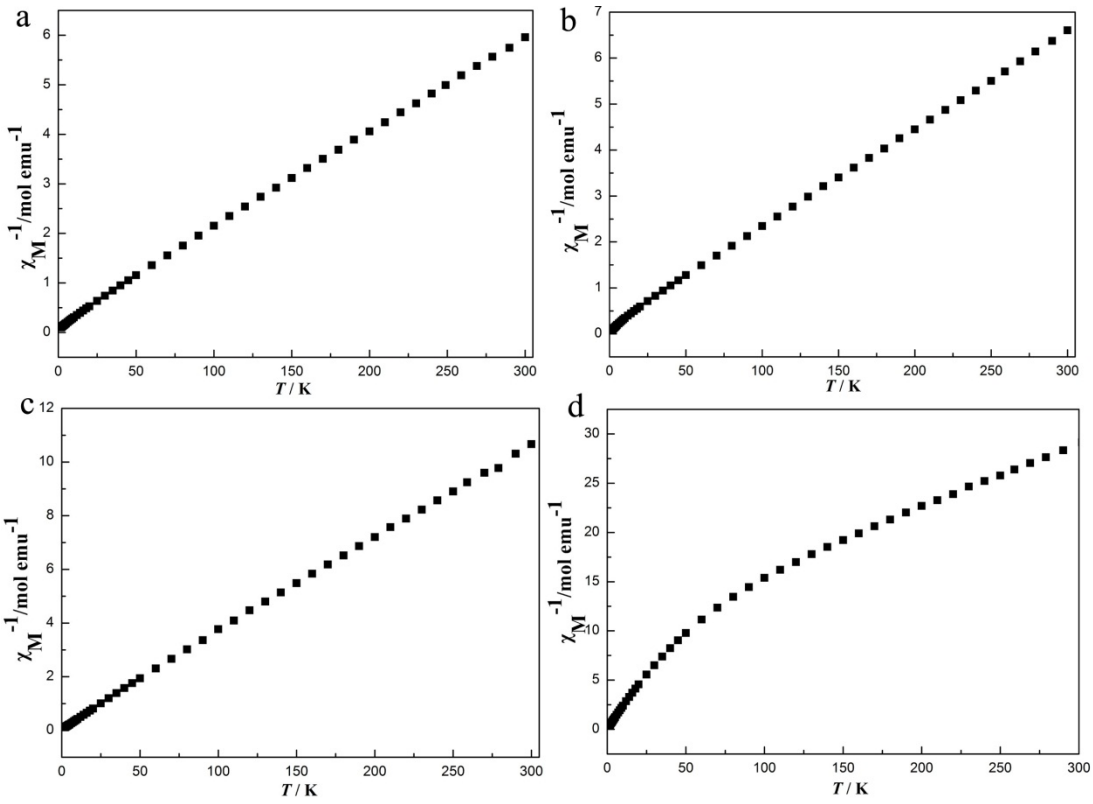

Figure S5. The χ_M^{-1} *vs T* curves of **1**(a), **2**(b), **3**(c), **4**(d).

Table S1 The RE–O bond in compounds **1–6**

Bond (RE–O)	Bond lengths (Å)	The average bond lengths (Å)
Ho(1)-O(4)	2.219	2.365
Ho(1)-O(43)#3	2.282	
Ho(1)-O(44)#3	2.328	
Ho(1)-O(37)#3	2.348	
Ho(1)-O(36)	2.365	
Ho(1)-O(37)	2.407	
Ho(1)-O(33)	2.412	
Ho(1)-O(34)	2.453	
Ho(2)-O(38)#3	2.271	
Ho(2)-O(31)	2.303	
Ho(2)-O(34)	2.333	
Ho(2)-O(43)	2.345	
Ho(2)-O(40)	2.349	
Ho(2)-O(37)#3	2.464	
Ho(2)-O(42)	2.476	
Ho(2)-O(33)	2.494	
Er(1)-O(4)	2.209	2.351
Er(1)-O(43)#3	2.257	
Er(1)-O(44)#3	2.309	
Er(1)-O(37)#3	2.341	
Er(1)-O(36)	2.388	
Er(1)-O(37)	2.393	
Er(1)-O(33)	2.402	
Er(1)-O(34)	2.44	
Er(2)-O(38)#3	2.249	
Er(2)-O(31)	2.275	
Er(2)-O(34)	2.299	
Er(2)-O(43)	2.32	
Er(2)-O(40)	2.329	
Er(2)-O(37)#3	2.442	
Er(2)-O(42)	2.482	
Er(2)-O(33)	2.483	
Tm(1)-O(2)	2.229	2.356
Tm(1)-O(37)	2.26	
Tm(1)-O(38)	2.326	
Tm(1)-O(43)	2.359	
Tm(1)-O(42)#3	2.377	
Tm(1)-O(43)#3	2.387	
Tm(1)-O(32)	2.401	

Tm(1)-O(40)#3	2.431	
Tm(2)-O(44)	2.257	
Tm(2)-O(26)	2.276	
Tm(2)-O(37)#3	2.307	
Tm(2)-O(40)#3	2.312	
Tm(2)-O(34)#3	2.318	
Tm(2)-O(43)	2.447	
Tm(2)-O(36)#3	2.475	
Tm(2)-O(32)	2.549	
Yb(1)-O(2)	2.185	2.334
Yb(1)-O(37)	2.235	
Yb(1)-O(43)	2.321	
Yb(1)-O(38)	2.335	
Yb(1)-O(42)#3	2.353	
Yb(1)-O(32)	2.356	
Yb(1)-O(43)#3	2.396	
Yb(1)-O(40)#3	2.406	
Yb(2)-O(26)	2.221	
Yb(2)-O(44)	2.251	
Yb(2)-O(37)#3	2.29	
Yb(2)-O(40)#3	2.301	
Yb(2)-O(34)#3	2.303	
Yb(2)-O(43)	2.414	
Yb(2)-O(36)#3	2.449	
Yb(2)-O(32)	2.535	
Lu(1)-O(2)	2.171	2.322
Lu(1)-O(37)	2.221	
Lu(1)-O(38)	2.307	
Lu(1)-O(43)	2.32	
Lu(1)-O(42)#5	2.345	
Lu(1)-O(32)	2.369	
Lu(1)-O(40)#5	2.392	
Lu(1)-O(43)#5	2.393	
Lu(2)-O(44)	2.209	
Lu(2)-O(26)	2.229	
Lu(2)-O(40)#5	2.269	
Lu(2)-O(37)#5	2.273	
Lu(2)-O(34)#5	2.301	
Lu(2)-O(43)	2.393	
Lu(2)-O(36)#5	2.436	
Lu(2)-O(32)	2.525	
Lu(1)-O(2)	2.171	
Y(1)-O(2)	2.223	2.367

Y(1)-O(37)	2.262	
Y(1)-O(38)	2.345	
Y(1)-O(43)	2.372	
Y(1)-O(32)	2.394	
Y(1)-O(43)#3	2.404	
Y(1)-O(42)#3	2.404	
Y(1)-O(40)#3	2.432	
Y(2)-O(44)	2.272	
Y(2)-O(26)	2.296	
Y(2)-O(37)#3	2.327	
Y(2)-O(40)#3	2.34	
Y(2)-O(34)#3	2.348	
Y(2)-O(43)	2.462	
Y(2)-O(36)#3	2.471	
Y(2)-O(32)	2.529	
Y(1)-O(2)	2.223	