A folded [2×2] metallosupramolecular grid from a bis-tridentate (1,2,3-triazol-4-yl)-picolinamide (tzpa) ligand

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Supporting Information

Additional UV-Visible and Fluorescence Spectra and fitting

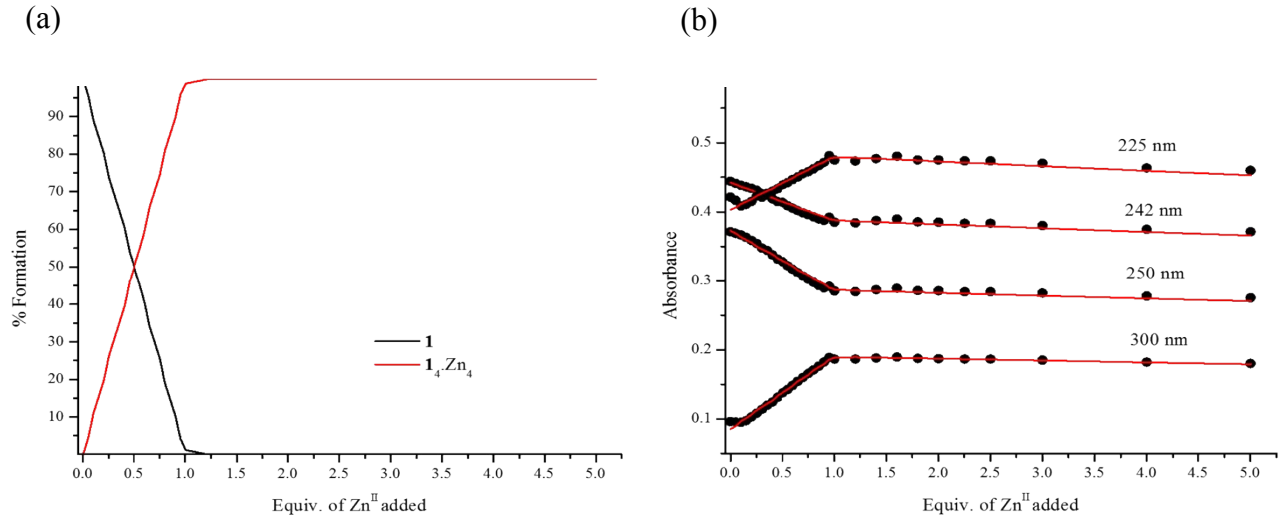


Figure S1. (a) Speciation distribution diagram obtained from UV-visible absorption titration data fit and (b) fit of experimental binding isotherms using the nonlinear regression analysis program ReactLab Equilibria.

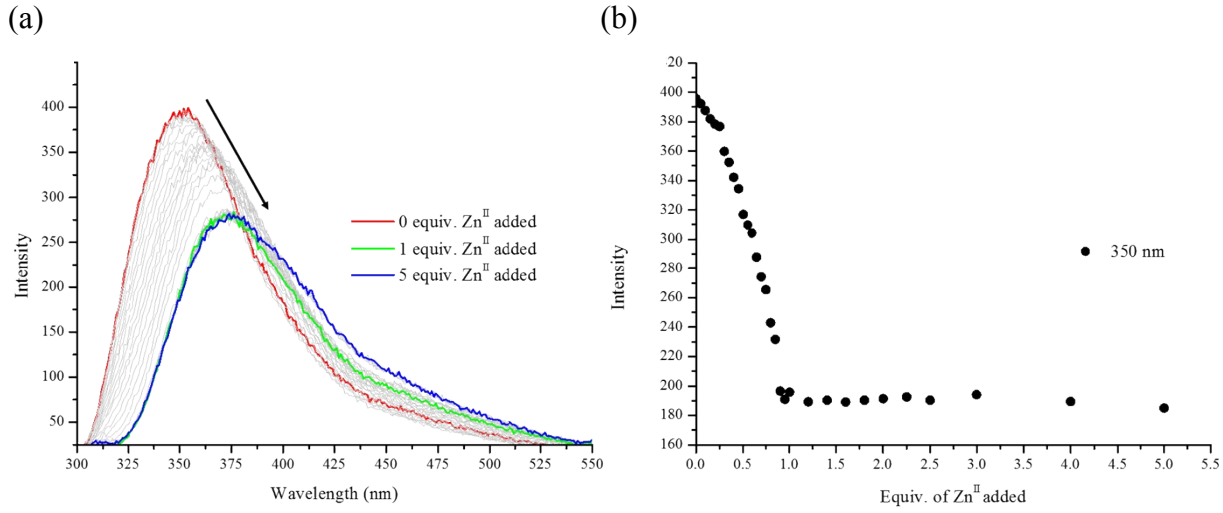


Figure S2. (a) The overall changes in the fluorescence emission spectra upon titrating **1** (1 x 10^{-5} M) against $Zn(ClO_4)_2.6H_2O$ (0→5equiv.) in CH_3CN at RT and (b) corresponding experimental binding isotherm at λ = 350 nm.

NMR Titration and VT-NMR Figures

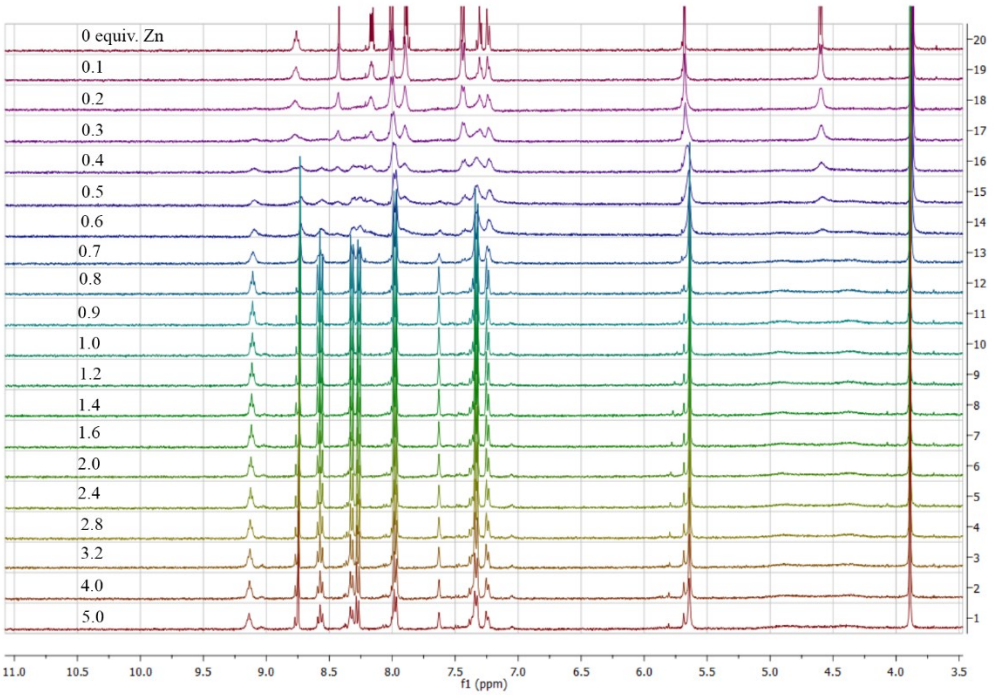


Figure S3. ^{1}H NMR titration of **1** (1 x 10^{-3} M) with Zn^{II} from 0 – 5 equiv. in CD_3CN.

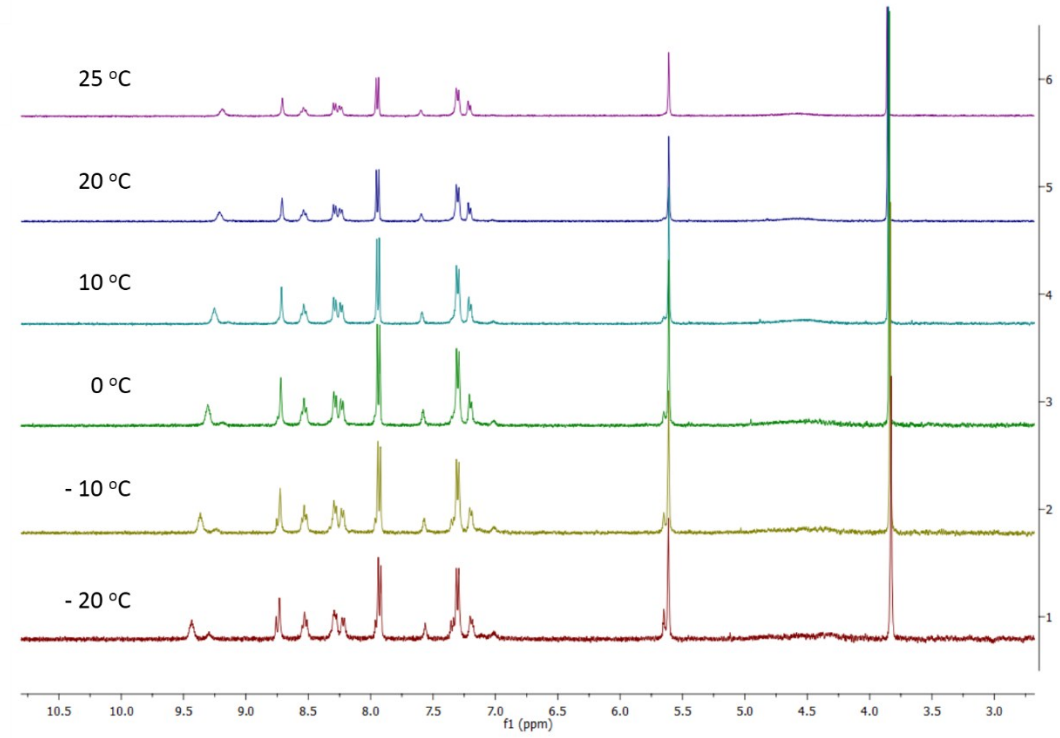
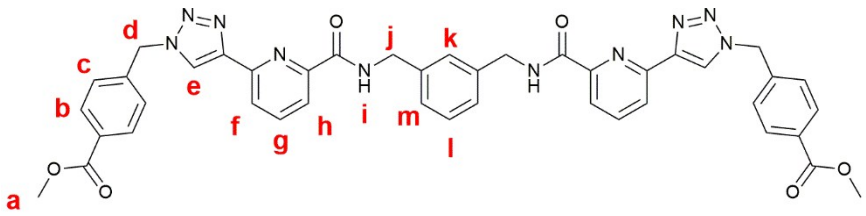


Figure S4. ^{1}H NMR spectrum of $[Zn_4(\mathbf{1})_4]^{8+}$ (assembled *in situ* in CD_3CN) at 25 °C, 20 °C, 0 °C, -10 °C and -20 °C.

T_1 Data Table and DOSY Spectra

Table S1. ^{1}H NMR assignment for **1** and re-dissolved $[Zn_4(\mathbf{1})_4]^{8+}$ in CD_3CN and associated T_1 relaxation times. Uncertainties presented at 95% confidence level.



	Ligand 1		$[Zn_4(1)_4]$ complex	
Proton label	**ppm**	**T_1 (s)**	**ppm**	**T_1 (s)**
a	3.83	0.56(1)	3.86	1.4(2)
b	7.97	2.55(4)	7.94	2.83(9)
c	7.41	2.24(3)	7.30	2.26(7)
d	5.65	1.1(2)	5.61	0.64(3)
e	8.40	1.79(4)	8.72	2.07(13)
f	8.13	2.24(4)	8.29	1.60(7)
g	7.86	2.01(3)	8.54	1.33(5)
h	7.86	2.01(3)	8.24	0.96(4)
i	8.74	0.59(3)	9.22	0.49(2)
j	4.56	0.57(1)	4.59	0.37(4)
k	7.27	1.30(5)	7.60	1.83(10)
l	7.27	1.30(5)	7.30	2.26(8)
m	7.20	1.68(2)	7.21	1.68(4)

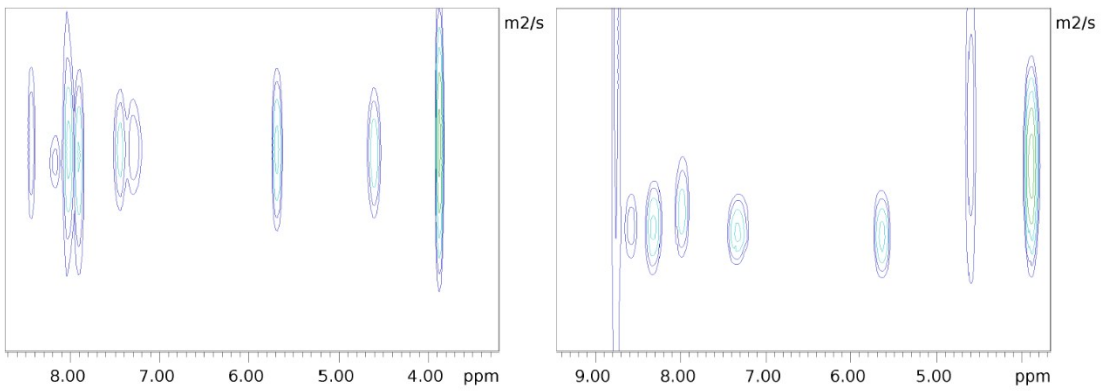


Figure S5 Comparison of DOSY NMR spectra for ligand **1** (left) and $[Zn_4(\mathbf{1})_4]^{8+}$ (right)

Mass Spectrometry

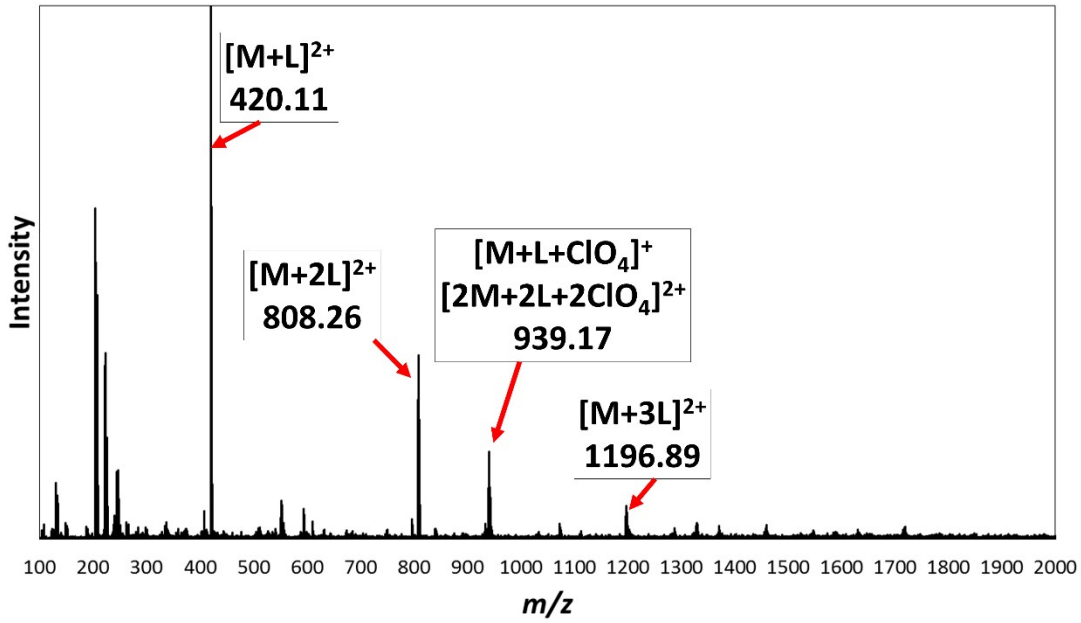


Figure S6 Electrospray mass spectrum (positive ionisation mode) for $[Zn_4(\mathbf{1})_4]^{8+}$

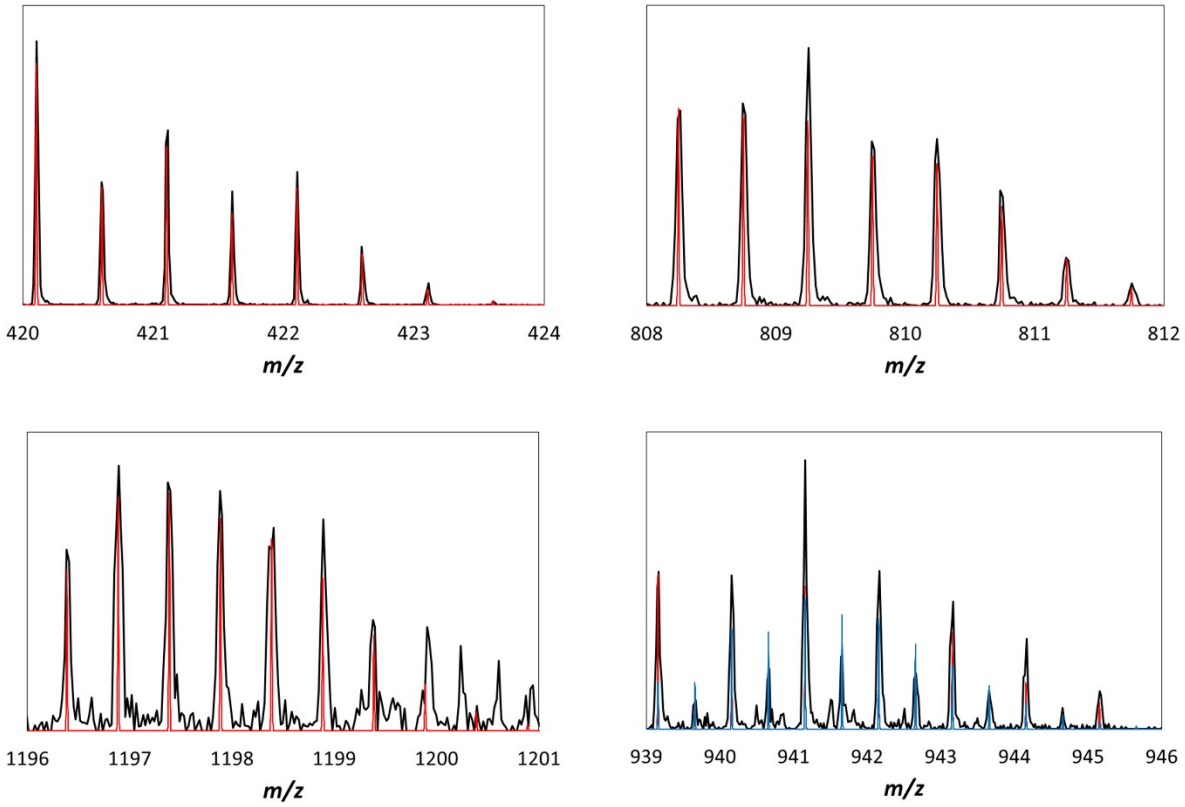


Figure S7 Enlarged regions corresponding to the identified complex fragments listed in Figure S9, comparing measured data (black) to simulated isotopic distribution (red, or red/blue in the case of two overlapping fragments for $[M+L+ClO_4]^+/[2M+2L+2ClO_4]^{2+}$).[S1]

Computational Data and Figures

Geometry optimized structures of $[Zn_4(\mathbf{1})_4]^{8+}$ were calculated from the crystal structure with the semiempirical method PM3 using Gaussian Software.[S2] The optimization in acetonitrile was carried out with polarizable continuum model (PCM).

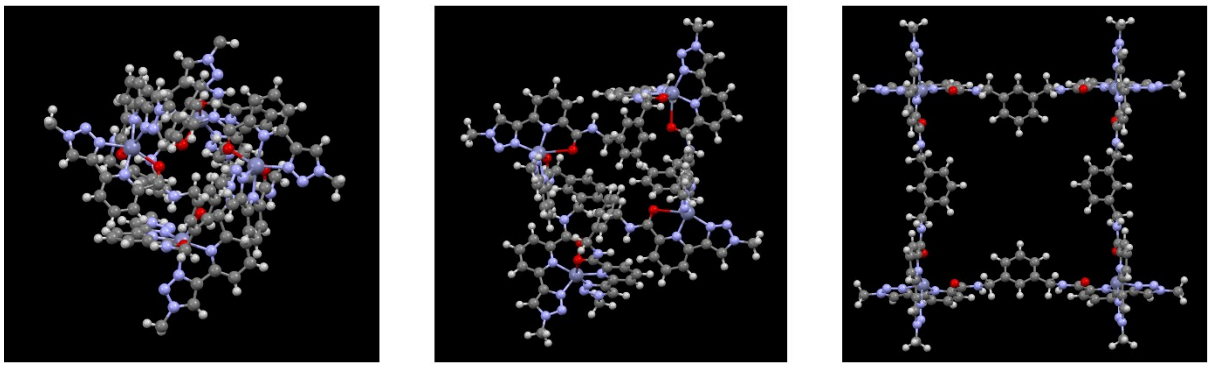


Figure S8 Comparison of the X-ray crystal structure (left), energy-minimized structure in MeCN (middle) and energy-minimized structure in vacuum (right). All structures are presented without pendant benzyl groups for clarity and/or to simply geometry optimization calculation.

Table S2: Coordinates for $[Zn_4(\mathbf{1})_4]^{8+}$ in vacuum; PM3

Atom	x	y	z	Atom	x	y	z	Atom	x	y	z
C	15.238	-3.099	2.679	C	1.327	-13.554	3.299	H	-3.200	15.419	3.761
C	-15.238	3.099	2.679	C	-15.225	-3.167	-2.678	H	3.199	-15.419	3.760
C	3.099	15.238	-2.679	C	15.225	3.167	-2.678	N	14.151	-2.141	2.392
C	-3.099	-15.238	-2.679	C	-3.167	15.224	2.678	N	-14.151	2.141	2.392
C	13.559	-1.266	3.299	C	3.167	-15.224	2.678	N	2.141	14.151	-2.392
C	-13.559	1.266	3.299	H	-3.769	8.175	-1.832	N	-2.141	-14.151	-2.392
C	1.266	13.559	-3.299	H	3.769	-8.175	-1.832	N	13.602	-1.987	1.161
C	-1.266	-13.559	-3.299	H	8.175	3.769	1.832	N	-13.602	1.987	1.161
C	12.614	-0.567	2.544	H	-8.175	-3.769	1.832	N	1.987	13.602	-1.161
C	-12.614	0.567	2.544	H	-8.192	3.732	-1.832	N	-1.987	-13.602	-1.161
C	0.567	12.614	-2.544	H	8.192	-3.732	-1.832	N	12.694	-1.065	1.229
C	-0.567	-12.614	-2.544	H	3.732	8.192	1.832	N	-12.694	1.065	1.229
C	11.668	0.494	2.866	H	-3.732	-8.192	1.832	N	1.065	12.694	-1.229
C	-11.668	-0.494	2.866	H	13.823	-1.182	4.361	N	-1.065	-12.694	-1.229
C	-0.494	11.668	-2.866	H	-13.823	1.182	4.361	N	-0.940	10.899	-1.816
C	0.494	-11.668	-2.866	H	1.182	13.823	-4.361	N	0.940	-10.899	-1.816
C	11.535	1.051	4.145	H	-1.182	-13.823	-4.361	N	10.899	0.940	1.816
C	-11.535	-1.051	4.145	H	12.158	0.686	4.975	N	-10.899	-0.940	1.816
C	-1.051	11.535	-4.145	H	-12.158	-0.686	4.975	N	-3.272	8.170	-0.963

C	1.051	-11.535	-4.145	H	-0.686	12.158	-4.975	N	3.272	-8.170	-0.963
C	-2.076	10.612	-4.342	H	0.686	-12.158	-4.975	N	8.170	3.272	0.963
C	2.076	-10.612	-4.342	H	-2.531	10.499	-5.336	N	-8.170	-3.272	0.963
C	10.612	2.076	4.342	H	2.531	-10.499	-5.336	N	-8.185	3.234	-0.963
C	-10.612	-2.076	4.342	H	10.499	2.531	5.336	N	8.185	-3.234	-0.963
C	-2.527	9.839	-3.272	H	-10.499	-2.531	5.336	N	3.234	8.185	0.963
C	2.527	-9.839	-3.272	H	-3.342	9.112	-3.414	N	-3.234	-8.185	0.963
C	9.839	2.527	3.272	H	3.342	-9.112	-3.414	N	-10.903	0.891	-1.816
C	-9.839	-2.527	3.272	H	9.112	3.342	3.414	N	10.903	-0.891	-1.816
C	-1.943	9.995	-2.009	H	-9.112	-3.342	3.414	N	0.891	10.903	1.816
C	1.943	-9.995	-2.009	H	-2.500	5.520	-1.083	N	-0.891	-10.903	1.816
C	9.995	1.943	2.009	H	2.500	-5.520	-1.083	N	-12.690	-1.122	-1.228
C	-9.995	-1.943	2.009	H	5.520	2.500	1.083	N	12.690	1.122	-1.228
C	-2.361	9.216	-0.789	H	-5.520	-2.500	1.083	N	-1.122	12.690	1.228
C	2.361	-9.216	-0.789	H	-3.245	3.231	-1.658	N	1.122	-12.690	1.228
C	9.216	2.361	0.789	H	3.245	-3.231	-1.658	N	-13.593	-2.049	-1.161
C	-9.216	-2.361	0.789	H	3.231	3.245	1.657	N	13.593	2.049	-1.161
C	-3.946	7.472	0.163	H	-3.231	-3.245	1.658	N	-2.049	13.593	1.161
C	3.946	-7.472	0.163	H	-5.531	2.475	-1.083	N	2.049	-13.593	1.161
C	7.472	3.946	-0.163	H	5.531	-2.475	-1.083	N	-14.141	-2.205	-2.392
C	-7.472	-3.946	-0.163	H	2.475	5.531	1.083	N	14.141	2.205	-2.392
C	-4.412	6.104	-0.248	H	-2.475	-5.531	1.083	N	-2.205	14.141	2.392
C	4.412	-6.104	-0.248	H	-6.414	6.385	0.527	N	2.205	-14.141	2.392
C	6.104	4.412	0.248	H	6.414	-6.385	0.527	O	-1.858	9.454	0.317
C	-6.104	-4.412	0.248	H	6.385	6.414	-0.527	O	1.858	-9.454	0.317
C	-3.528	5.213	-0.859	H	-6.385	-6.414	-0.527	O	9.454	1.858	-0.317
C	3.528	-5.213	-0.858	H	-9.126	3.300	-3.413	O	-9.454	-1.858	-0.317
C	5.213	3.528	0.858	H	9.126	-3.300	-3.413	O	-9.463	1.815	0.317
C	-5.213	-3.528	0.858	H	3.300	9.126	3.413	O	9.463	-1.815	0.317
C	-3.941	3.924	-1.172	H	-3.300	-9.126	3.413	O	1.815	9.463	-0.317
C	3.941	-3.924	-1.172	H	-10.510	2.484	-5.336	O	-1.815	-9.463	-0.317
C	3.924	3.941	1.172	H	10.510	-2.484	-5.336	Zn	11.376	0.026	0.000
C	-3.924	-3.941	1.172	H	-2.484	-10.510	5.336	Zn	-11.376	-0.026	0.000
C	-5.229	3.504	-0.858	H	2.484	10.510	5.336	Zn	-0.026	11.376	0.000
C	5.229	-3.504	-0.858	H	-12.161	0.631	-4.975	Zn	0.026	-11.376	0.000
C	3.504	5.229	0.858	H	12.161	-0.631	-4.975	H	-8.108	4.758	0.532
C	-3.504	-5.229	0.858	H	0.631	12.161	4.975	H	8.108	-4.758	0.532
C	-6.124	4.384	-0.248	H	-0.631	-12.161	4.975	H	4.758	8.108	-0.532
C	6.124	-4.384	-0.248	H	-13.818	-1.244	-4.360	H	-4.758	-8.108	-0.532
C	4.385	6.124	0.248	H	13.818	1.244	-4.360	H	-14.953	-4.179	-2.339
C	-4.385	-6.124	0.248	H	-1.244	13.818	4.360	H	14.952	4.179	-2.340
C	-5.715	5.689	0.045	H	1.244	-13.818	4.360	H	-4.178	14.953	2.338
C	5.715	-5.689	0.045	H	16.163	-2.808	2.155	H	4.179	-14.953	2.339
C	5.689	5.715	-0.045	H	-16.163	2.808	2.156	H	-16.154	-2.872	-2.165

C	-5.689	-5.715	-0.045	H	2.809	16.163	-2.155	H	16.154	2.873	-2.164
C	-7.489	3.912	0.163	H	-2.808	-16.163	-2.155	H	-2.872	16.154	2.166
C	7.489	-3.912	0.163	H	14.965	-4.114	2.351	H	2.873	-16.154	2.165
C	3.912	7.489	-0.163	H	-14.965	4.114	2.350	H	-15.419	-3.199	-3.761
C	-3.912	-7.489	-0.163	H	4.114	14.964	-2.352	H	15.420	3.198	-3.760
C	-9.226	2.319	-0.788	H	-4.114	-14.964	-2.352	C	11.540	-0.999	-4.145
C	9.226	-2.319	-0.788	H	15.441	-3.121	3.760	C	0.999	11.540	4.145
C	2.319	9.226	0.788	H	-15.441	3.121	3.760	C	-0.999	-11.540	4.145
C	-2.319	-9.226	0.788	H	3.120	15.442	-3.760	C	-11.670	0.441	-2.866
C	-10.003	1.898	-2.009	H	-3.121	-15.441	-3.760	C	11.670	-0.441	-2.866
C	10.003	-1.898	-2.009	H	-4.795	8.087	0.532	C	0.441	11.670	2.866
C	1.898	10.003	2.009	H	4.795	-8.087	0.532	C	-0.441	-11.670	2.866
C	-1.898	-10.003	2.009	H	8.087	4.795	-0.532	C	-12.612	-0.624	-2.544
C	-9.850	2.482	-3.272	H	-8.087	-4.795	-0.532	C	12.612	0.624	-2.544
C	9.850	-2.482	-3.272	H	-3.233	7.375	1.007	C	-0.624	12.612	2.544
C	2.482	9.850	3.272	H	3.233	-7.375	1.007	C	0.624	-12.612	2.544
C	-2.482	-9.850	3.272	H	7.375	3.233	-1.007	C	-13.554	-1.327	-3.299
C	-10.621	2.028	-4.342	H	-7.375	-3.233	-1.007	C	13.554	1.327	-3.299
C	10.621	-2.028	-4.342	H	-7.389	3.199	1.007	C	-1.327	13.554	3.299
C	2.028	10.621	4.342	H	7.389	-3.199	1.008	H	-3.199	-7.389	-1.008
C	-2.028	-10.621	4.342	H	3.199	7.389	-1.008	C	-11.540	0.999	-4.145

Table S3: Coordinates for $[Zn_4(\mathbf{1})_4]^{8+}$ in acetonitrile; PM3/PCM

Atom	x	y	z	Atom	x	y	z	Atom	x	y	z
C	-2.643	9.348	6.744	C	11.553	-0.921	-2.471	H	-14.005	-3.145	-1.346
C	3.030	-0.685	10.695	C	4.002	-8.787	7.441	H	13.759	0.581	-2.262
C	-7.642	-6.551	-7.575	C	-2.852	12.122	-1.451	N	-2.724	8.617	5.468
C	8.555	-0.677	-9.799	C	-13.228	-3.912	-1.473	N	3.036	-1.215	9.321
C	-3.666	7.655	5.122	C	12.952	1.212	-2.660	N	-7.442	-5.943	-6.249
C	3.835	-0.779	8.270	H	-5.393	-3.252	1.456	N	8.098	-0.295	-8.452
C	-6.675	-6.457	-5.211	H	4.661	2.484	-1.303	N	-1.839	8.805	4.453
C	7.238	0.750	-8.135	H	-3.933	3.784	-1.316	N	2.235	-2.237	8.920
C	-3.306	7.266	3.831	H	3.871	-3.444	1.255	N	-8.014	-4.765	-5.883
C	3.474	-1.598	7.197	H	-3.035	-2.205	5.331	N	8.484	-0.955	-7.328
C	-6.809	-5.520	-4.183	H	2.969	5.063	2.243	N	-2.168	8.017	3.479
C	7.119	0.691	-6.745	H	-5.565	1.175	-5.049	N	2.479	-2.475	7.670
C	-3.865	6.298	2.895	H	5.296	-4.971	-3.252	N	-7.652	-4.501	-4.667
C	3.917	-1.665	5.810	H	-4.491	7.317	5.760	N	7.916	-0.386	-6.312
C	-6.248	-5.439	-2.840	H	4.570	0.032	8.326	N	-6.597	-4.321	-2.122
C	6.363	1.479	-5.780	H	-6.108	-7.394	-5.243	N	6.496	1.086	-4.471
C	-4.985	5.503	3.167	H	6.782	1.437	-8.856	N	-3.206	6.199	1.694

C	4.902	-0.833	5.265	H	-5.506	5.594	4.129	N	3.290	-2.615	5.039
C	-5.398	-6.409	-2.294	H	5.401	-0.084	5.895	N	-6.109	-2.632	1.128
C	5.538	2.557	-6.126	H	-5.134	-7.301	-2.878	N	5.358	1.814	-1.041
C	-4.901	-6.218	-1.007	H	5.445	2.865	-7.175	N	-3.228	4.454	-1.552
C	4.843	3.222	-5.117	H	-4.235	-6.967	-0.559	N	3.228	-4.097	1.661
C	-5.420	4.600	2.198	H	4.193	4.071	-5.366	N	-2.190	-1.669	5.408
C	5.231	-0.973	3.918	H	-6.297	3.969	2.391	N	2.082	4.922	2.691
C	-5.245	-5.074	-0.289	H	5.996	-0.327	3.468	N	-5.277	0.215	-5.050
C	4.967	2.805	-3.793	H	-4.848	-4.905	0.725	N	5.053	-4.219	-3.869
C	-4.740	4.496	0.986	H	4.411	3.313	-2.989	N	0.003	-4.546	6.096
C	4.584	-1.930	3.139	H	-5.068	3.779	0.217	N	0.385	7.723	0.990
C	-6.101	-4.129	-0.867	H	4.827	-2.041	2.070	N	-8.380	-1.118	-3.580
C	5.805	1.726	-3.486	H	-4.431	-0.227	-0.115	N	8.176	-2.327	-3.321
C	-3.626	5.311	0.750	H	2.974	-0.270	-0.423	N	2.457	-5.696	6.597
C	3.611	-2.751	3.722	H	-0.829	2.305	-1.341	N	-1.836	9.223	0.343
C	-6.514	-2.850	-0.192	H	0.787	-2.578	0.255	N	-9.923	-3.149	-2.544
C	5.993	1.173	-2.102	H	-2.126	0.619	0.237	N	9.740	-0.067	-3.501
C	-2.806	5.275	-0.510	H	0.662	0.011	0.419	N	3.498	-6.423	6.859
C	2.839	-3.798	2.969	H	-0.695	-0.147	-1.722	N	-2.740	10.054	-0.074
C	-6.109	-1.286	1.754	H	0.603	-1.270	-1.842	N	-10.816	-3.965	-2.079
C	5.177	1.172	0.287	H	-1.114	0.597	2.502	N	10.626	0.879	-3.476
C	-2.357	4.105	-2.704	H	0.141	1.737	2.118	N	3.077	-7.691	7.106
C	2.325	-4.784	0.700	H	-2.106	-1.219	-3.458	N	-2.124	11.007	-0.822
C	-4.716	-0.774	1.961	H	1.925	-1.927	-3.845	N	-11.988	-3.285	-1.961
C	3.773	1.354	0.776	H	-4.739	-1.170	4.083	N	11.740	0.400	-2.861
C	-2.299	2.621	-2.903	H	4.287	2.988	2.094	O	-7.254	-2.039	-0.765
C	2.205	-3.996	-0.569	H	-3.718	2.646	-4.532	O	6.744	0.207	-1.893
C	-3.987	-0.260	0.886	H	3.553	-5.283	-1.660	O	-1.816	6.010	-0.650
C	2.756	0.518	0.311	H	-3.315	-4.033	5.618	O	1.924	-4.432	3.513
C	-1.450	1.840	-2.117	H	3.544	6.502	1.186	O	0.092	-1.902	5.370
C	1.369	-2.880	-0.625	H	-7.268	1.892	-4.677	O	-0.133	5.483	2.479
C	-2.699	0.220	1.088	H	6.982	-5.407	-2.550	O	-5.776	-1.804	-4.081
C	1.460	0.670	0.788	H	-3.361	-6.471	6.186	O	5.664	-2.067	-4.380
C	-1.382	0.468	-2.325	H	3.977	8.520	-0.231	Zn	-1.606	7.509	1.523
C	1.270	-2.147	-1.802	H	9.281	-5.608	-1.578	Zn	1.909	-3.738	6.104
C	-2.132	0.196	2.357	H	-9.636	2.504	-4.145	Zn	-7.917	-3.091	-3.148
C	1.169	1.651	1.730	H	-1.216	-7.670	6.689	Zn	7.818	-0.492	-4.219
C	-2.167	-0.134	-3.304	H	2.072	10.018	-0.877	H	-3.526	0.414	-6.161
C	2.006	-2.516	-2.923	H	-11.197	0.763	-3.236	H	3.221	-5.016	-4.470
C	-2.853	-0.315	3.436	H	10.861	-3.664	-1.710	H	4.724	-8.949	6.628
C	2.178	2.497	2.190	H	1.101	-8.686	7.148	H	-3.708	11.752	-2.035
C	-3.016	0.641	-4.093	H	-0.029	11.390	-1.424	H	-13.062	-4.407	-0.505
C	2.838	-3.636	-2.875	H	-12.622	-1.208	-2.381	H	12.758	2.026	-1.946
C	-4.151	-0.792	3.235	H	12.294	-1.541	-1.955	H	4.558	-8.560	8.362

C	3.482	2.341	1.717	H	-2.561	10.431	6.571	H	-3.228	12.819	-0.687
C	-3.074	2.023	-3.896	H	3.544	-1.379	11.377	H	-13.591	-4.662	-2.191
C	2.924	-4.383	-1.700	H	-8.693	-6.846	-7.712	H	13.289	1.654	-3.609
C	-2.251	-0.316	4.810	H	9.651	-0.616	-9.870	H	3.435	-9.716	7.595
C	1.871	3.551	3.212	H	-1.767	9.020	7.322	H	-2.180	12.671	-2.125
C	-3.821	-0.009	-5.179	H	2.002	-0.541	11.056	C	9.853	-3.600	-2.141
C	3.602	-4.042	-4.101	H	-7.372	-5.845	-8.374	C	-0.013	-5.887	6.401
C	-1.023	-2.430	5.487	H	8.249	-1.707	-10.037	C	0.613	8.825	0.200
C	1.046	5.712	2.179	H	-3.548	9.155	7.338	C	-9.680	-0.789	-3.280
C	-6.131	-0.651	-4.364	H	3.550	0.282	10.722	C	9.432	-2.422	-2.772
C	5.953	-3.147	-3.849	H	-7.012	-7.446	-7.670	C	1.291	-6.482	6.665
C	-1.160	-3.891	5.821	H	8.117	0.000	-10.546	C	-0.569	9.613	-0.129
C	1.416	6.902	1.337	H	-6.643	-1.391	2.721	C	-10.491	-1.879	-2.752
C	-7.529	-0.176	-4.075	H	5.907	1.639	0.981	C	10.253	-1.224	-2.885
C	7.310	-3.377	-3.243	H	-2.784	4.611	-3.595	C	1.694	-7.778	6.996
C	-2.383	-4.572	5.846	H	2.760	-5.787	0.511	C	-0.756	10.772	-0.885
C	2.719	7.175	0.902	H	-6.695	-0.568	1.145	C	-11.832	-1.967	-2.373
C	-7.966	1.138	-4.283	H	5.428	0.090	0.249	H	3.455	-3.311	-4.923
C	7.693	-4.568	-2.613	H	-1.334	4.513	-2.569	H	-2.879	0.298	5.489
C	-2.406	-5.930	6.160	H	1.322	-4.952	1.144	H	2.550	3.440	4.083
C	2.958	8.297	0.111	H	-1.243	0.147	4.805	C	-1.217	-6.601	6.441
C	-9.285	1.477	-3.983	H	0.838	3.445	3.601	C	1.903	9.132	-0.250
C	8.971	-4.676	-2.068	H	-3.617	-1.098	-5.229	C	-10.155	0.514	-3.479

^{1}H, ^{13}C and ^{19}F NMR Spectra

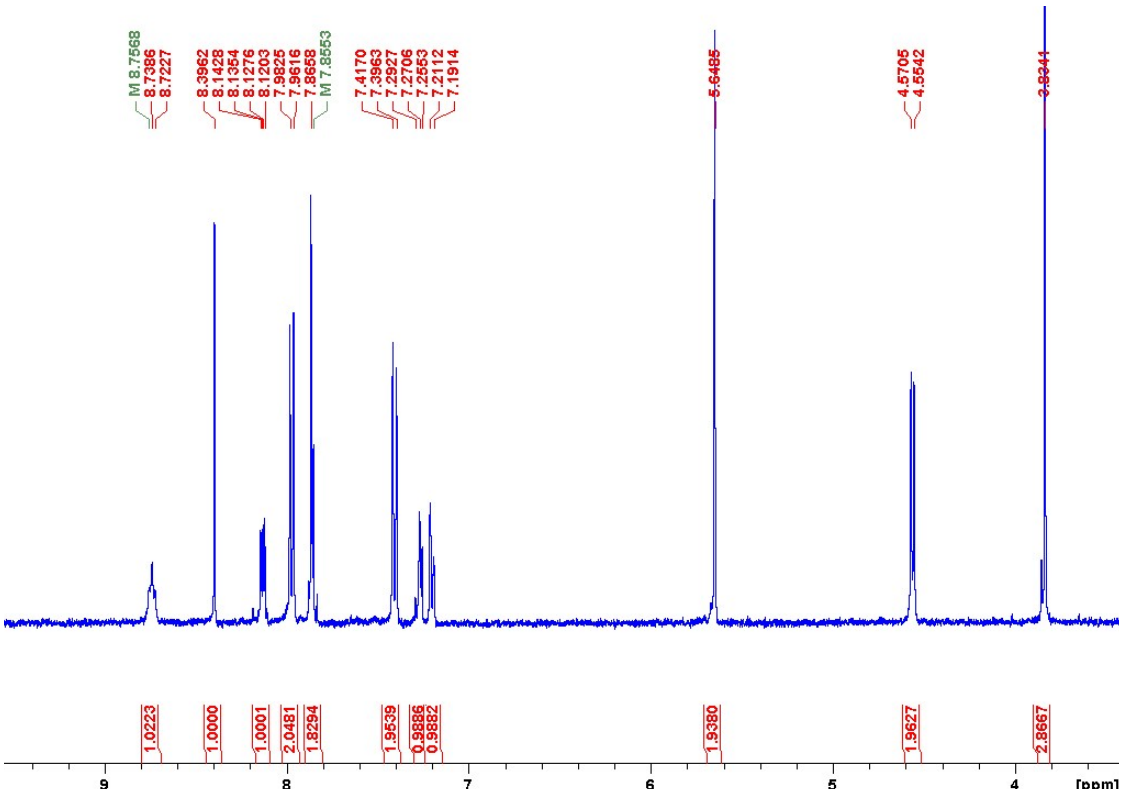


Figure S9. ^{1}H NMR (400 MHz, CD_3CN) spectrum of **1**.

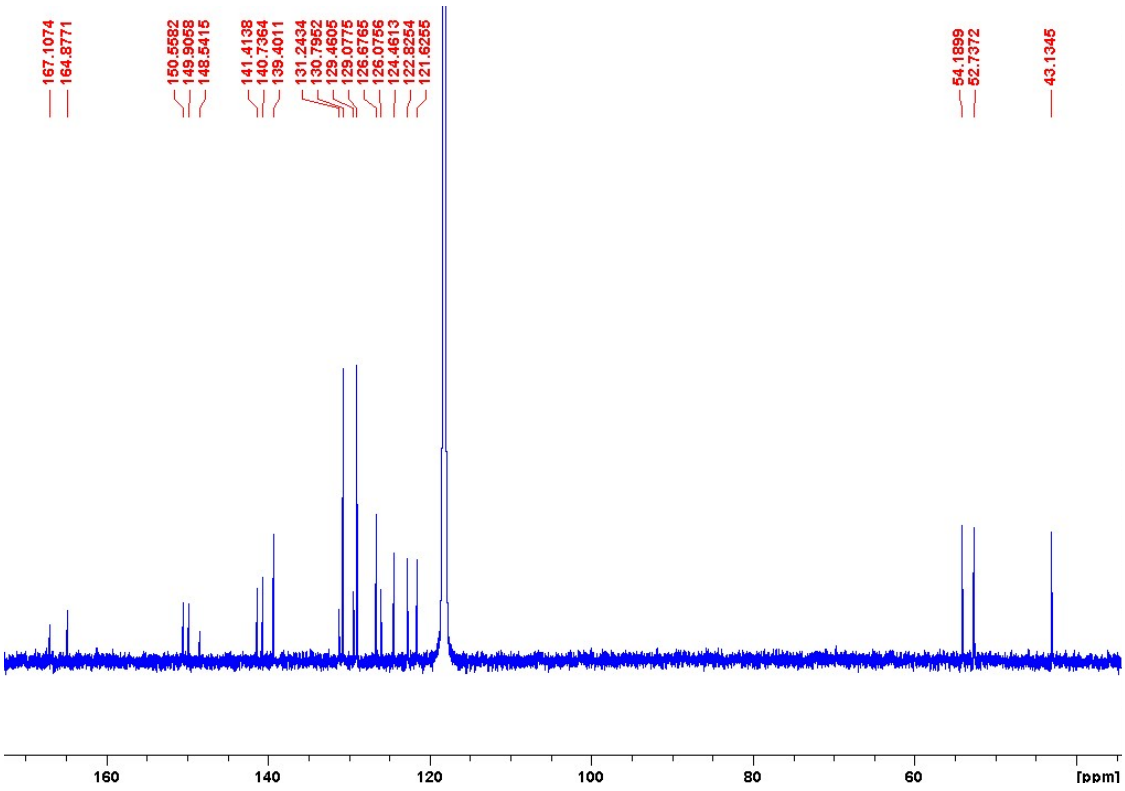


Figure S10. ^{13}C NMR (100 MHz, CD_3CN) spectrum of **1**.

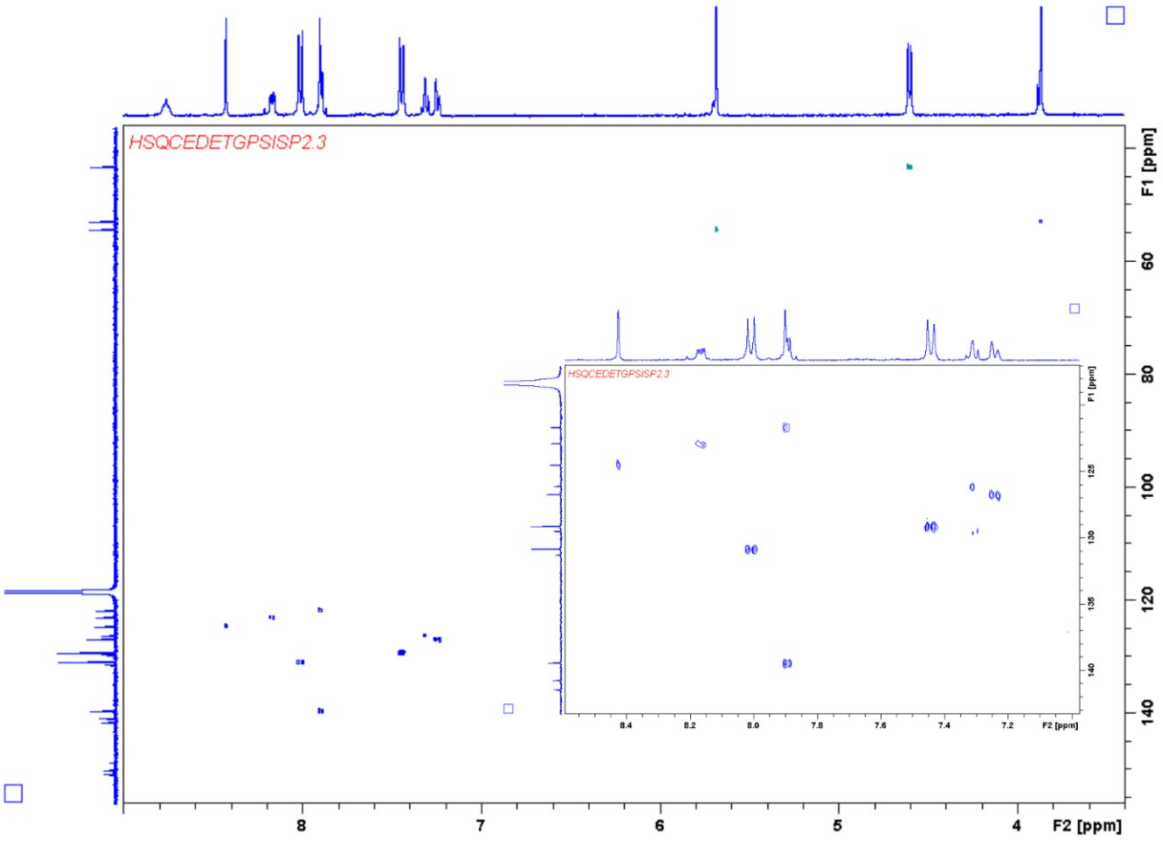


Figure S11. HSQC (400 MHz, CD_3CN) spectrum of **1**.

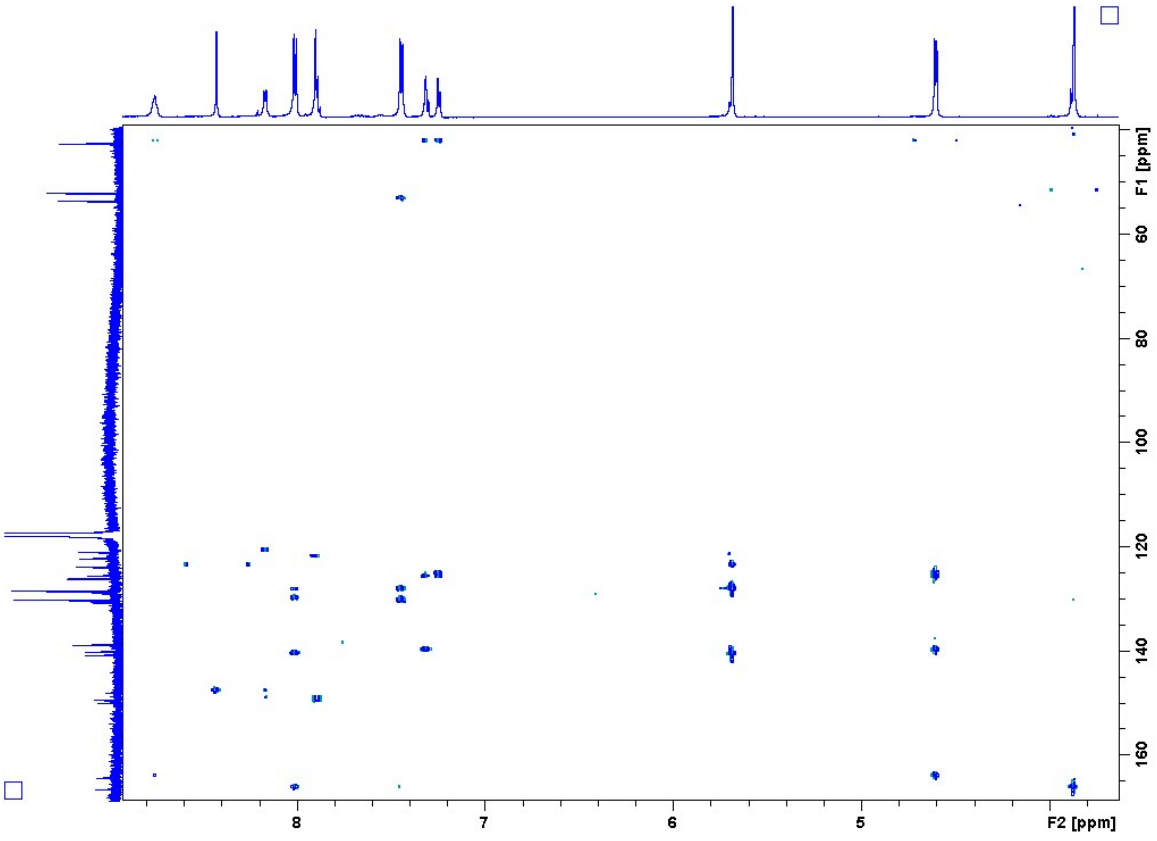


Figure S12. HMBC (600 MHz, CD_3CN) spectrum of **1**.

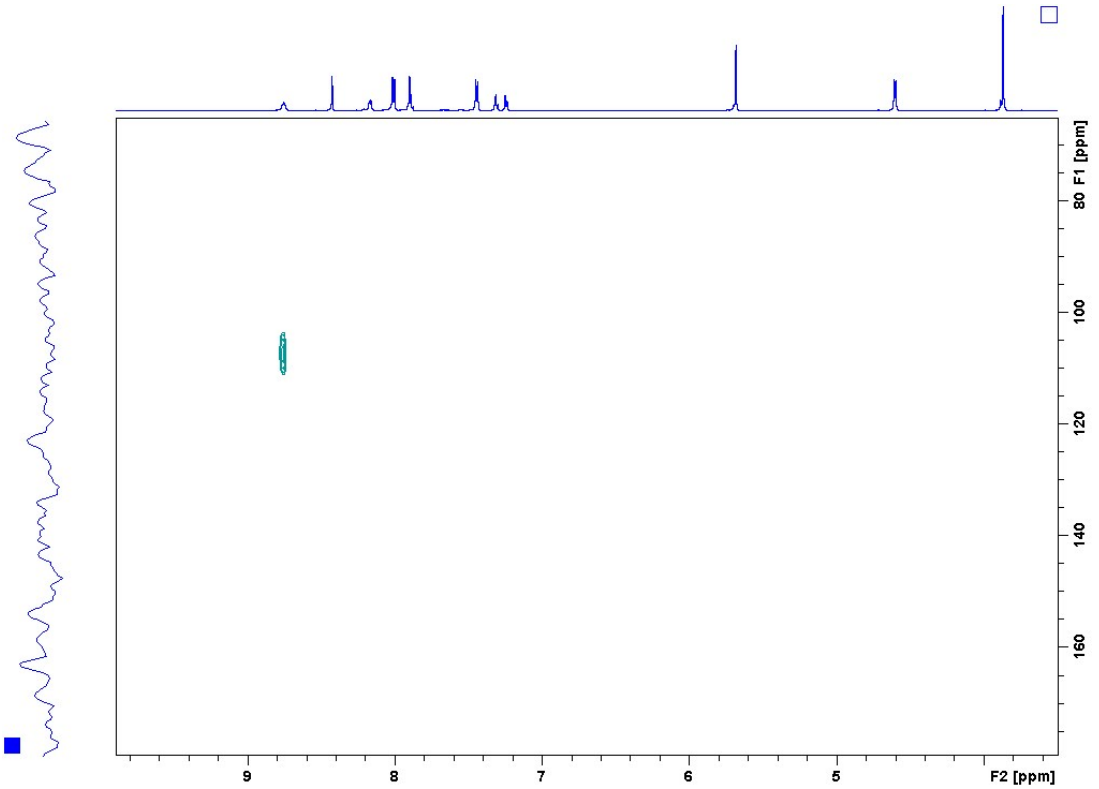


Figure S13. NHCOSY (600 MHz, CD_3CN) spectrum of **1**.

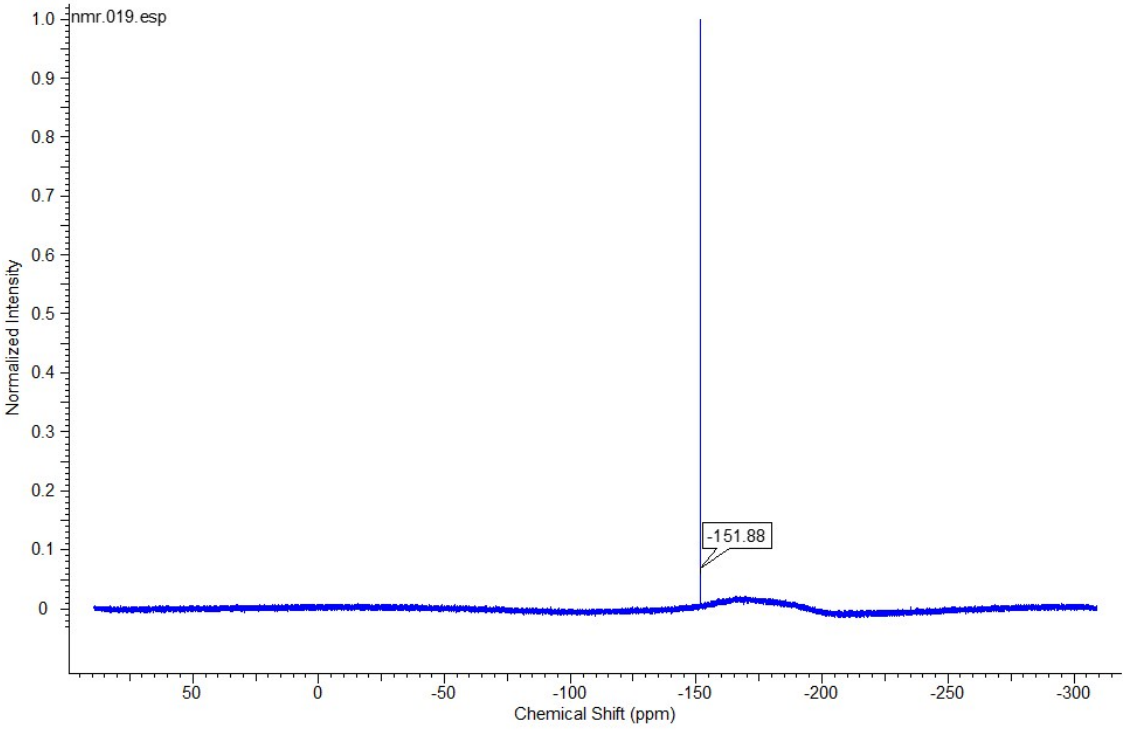


Figure S14. ^{19}F NMR spectrum of $[Zn_4.\mathbf{1}_4]^{8+}$ assembled *in situ* from **1** and $Zn(BF_4)_2.xH_2O$.

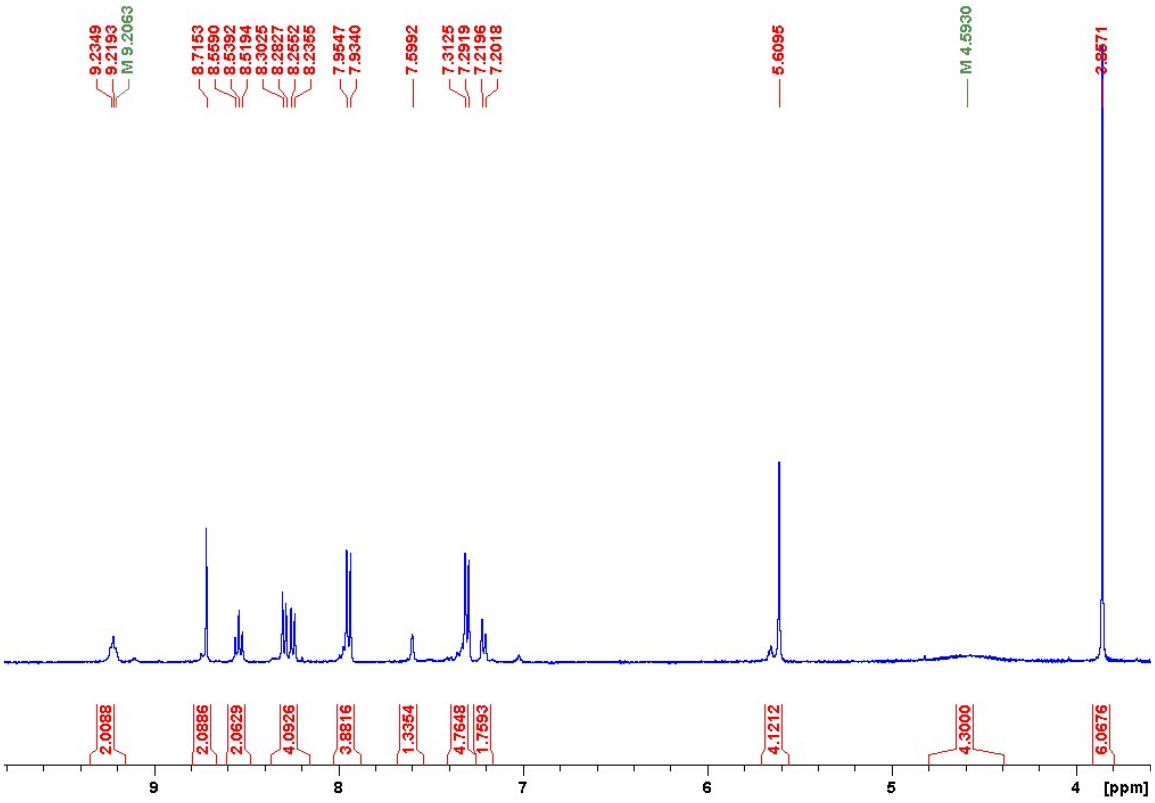


Figure S15. ^{1}H NMR (400 MHz, CD_3CN) spectrum of isolated $[Zn_4(\mathbf{1})_4]^{8+}$ complex.

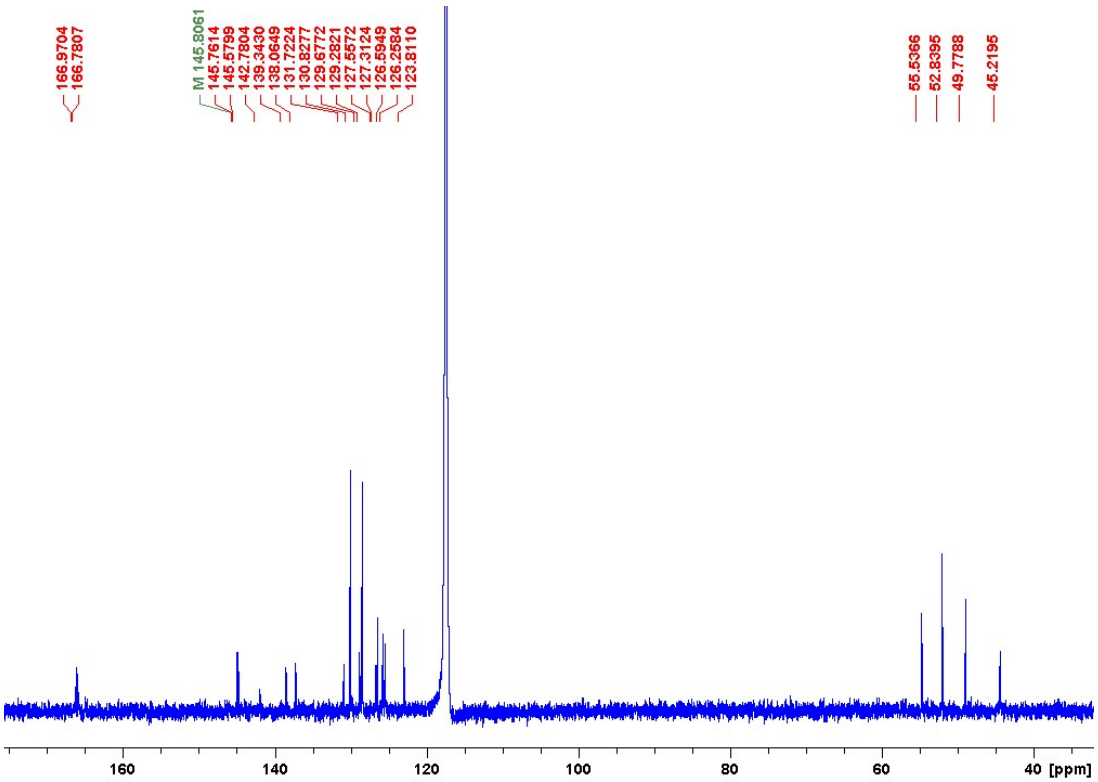


Figure S16. ^{13}C NMR (100 MHz, CD_3CN) spectrum of isolated $[Zn_4(\mathbf{1})_4]^{8+}$ complex.

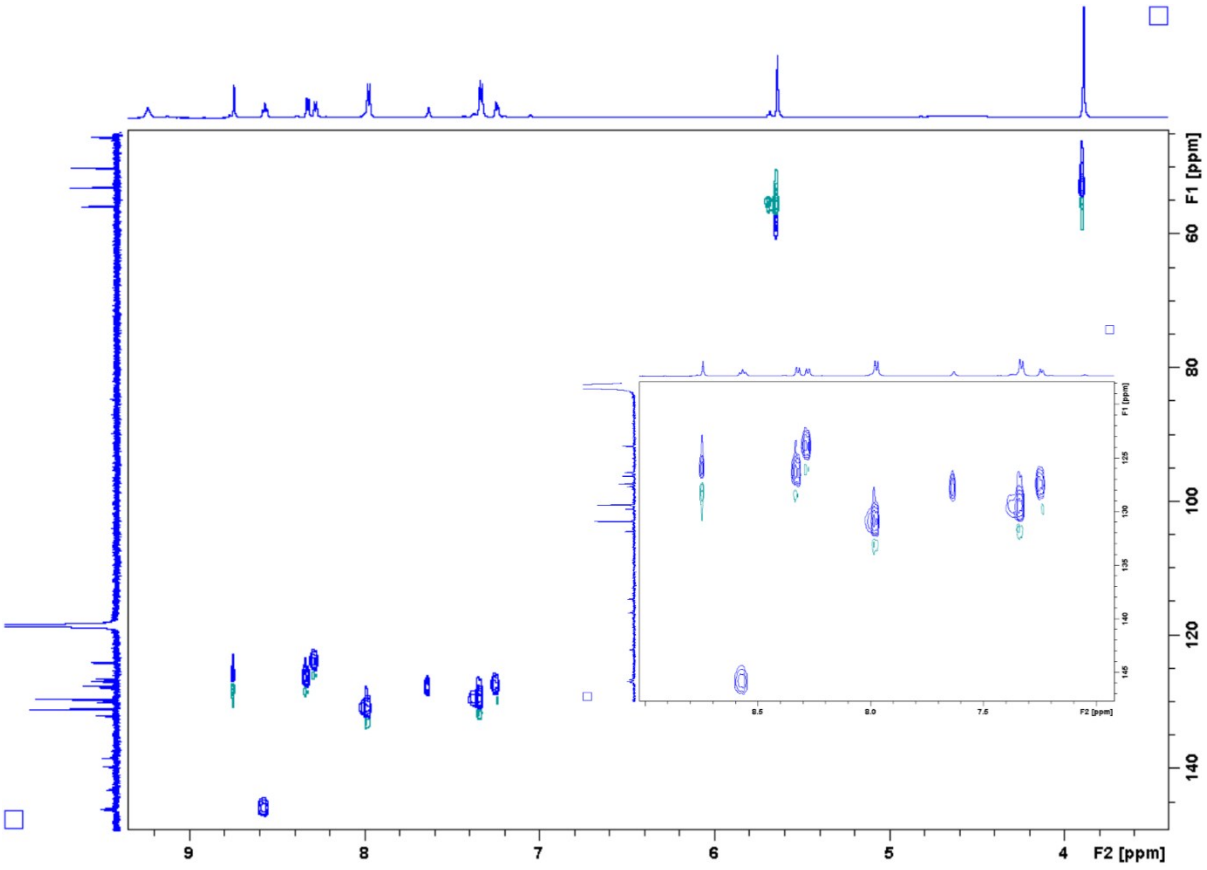


Figure S17. HSQC (600 MHz, CD_3CN) spectrum of isolated $[Zn_4(\mathbf{1})_4]^{8+}$ complex.

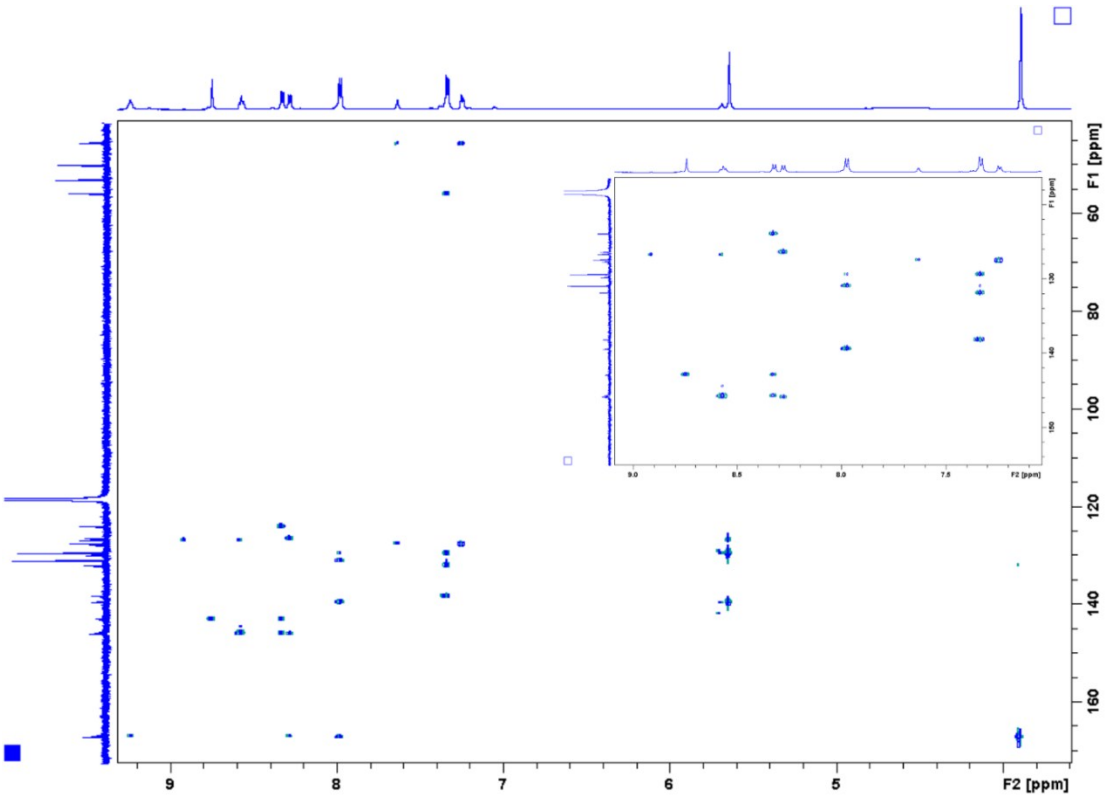


Figure S18. HMBC (600 MHz, CD_3CN) spectrum of isolated $[Zn_4(\mathbf{1})_4]^{8+}$ complex.

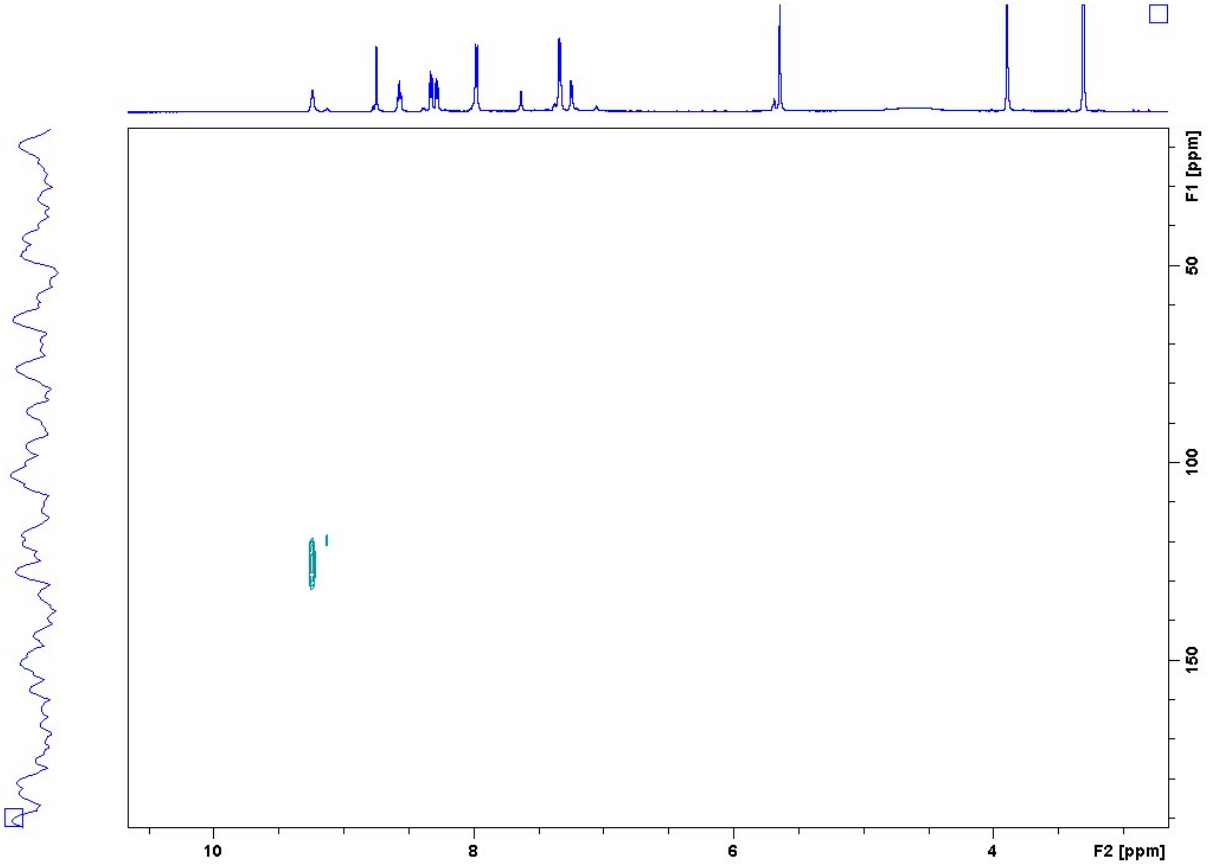


Figure S19. NHCOSY (600 MHz, CD_3CN) spectrum of isolated $[Zn_4(\mathbf{1})_4]^{8+}$ complex.

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