

# **Supplementary Material: A quasi-intramolecular solid-phase redox reaction of ammonia ligands and perchlorate anion in diamminesilver(I) perchlorate**

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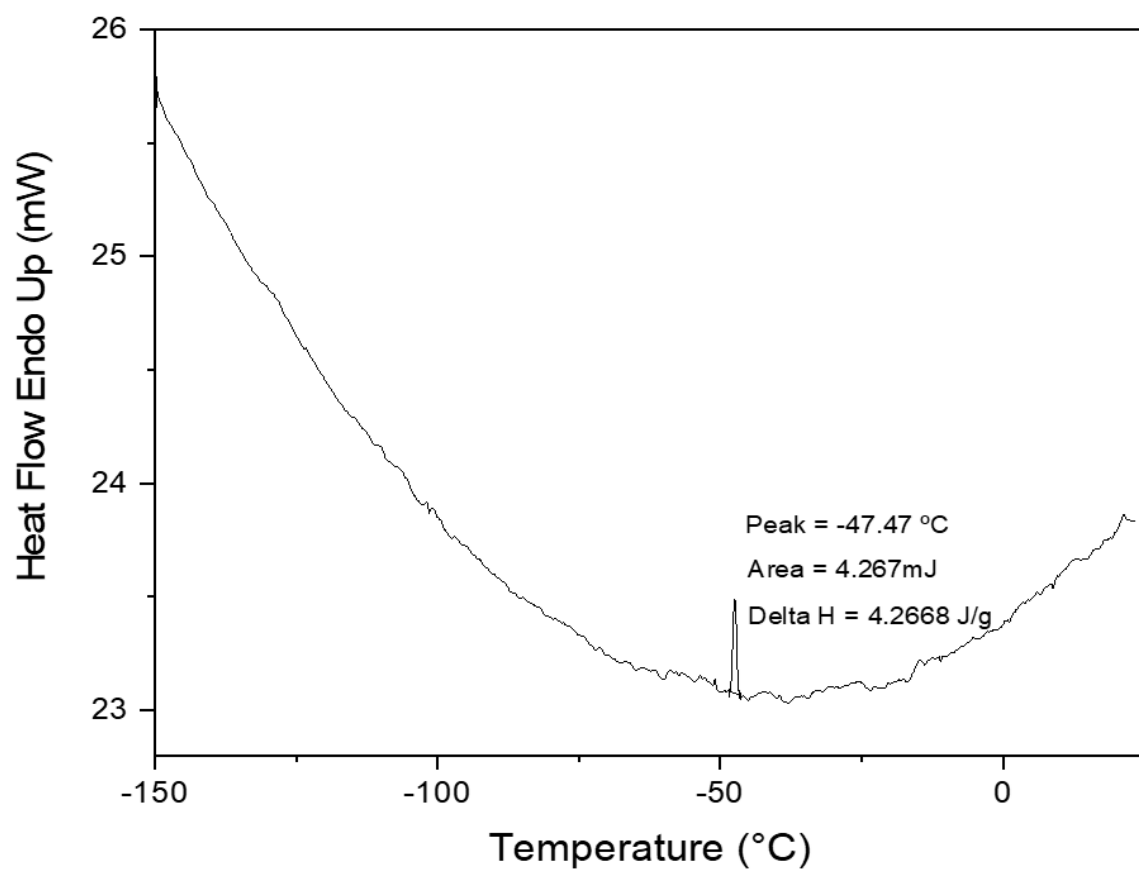
3 Faculty of Natural Sciences and Mathematics, Ss. Cyril and Methodius University, Skopje, Macedonia

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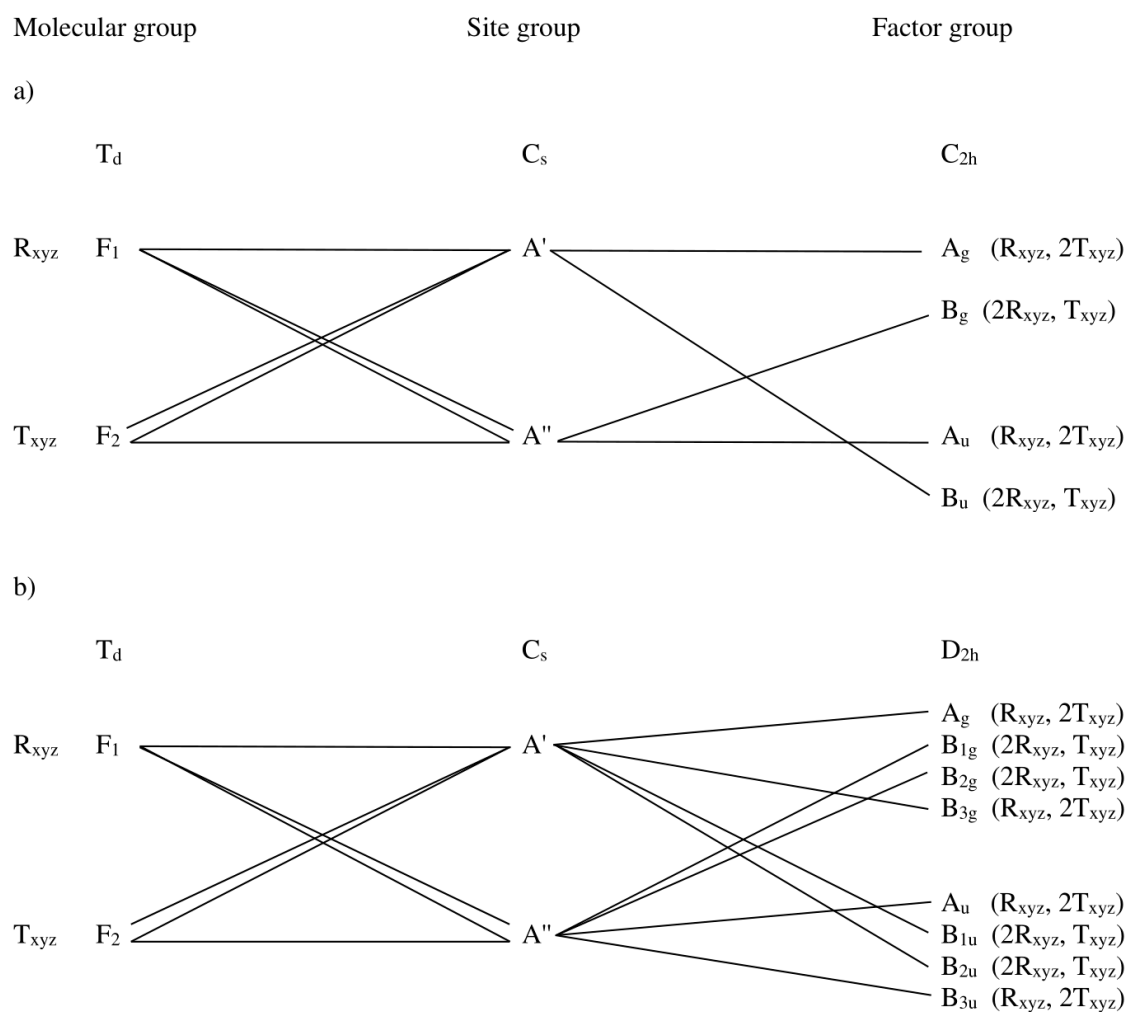
5 University of Pécs, Ifjúság útja 20, Pécs, H-7624, Hungary

6 Deuton-X Ltd, Selmec u. 89, Érd, H-2030, Hungary,

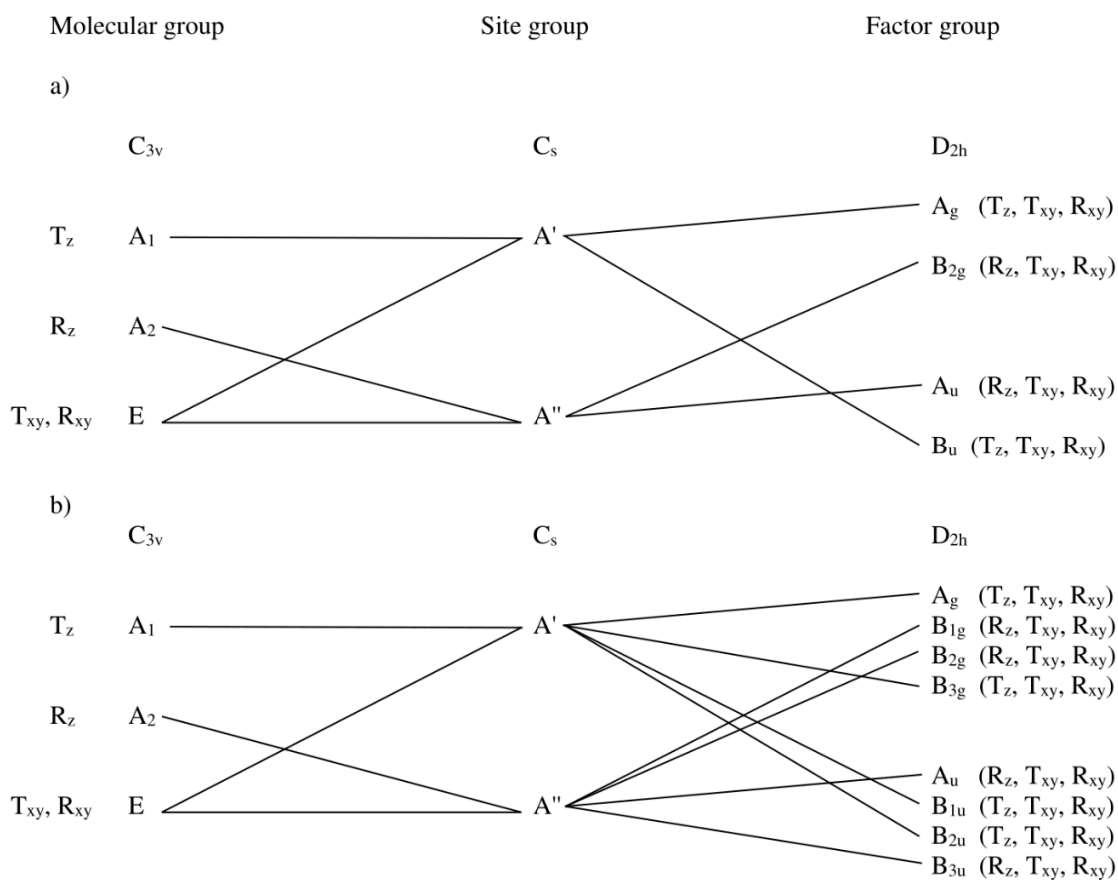
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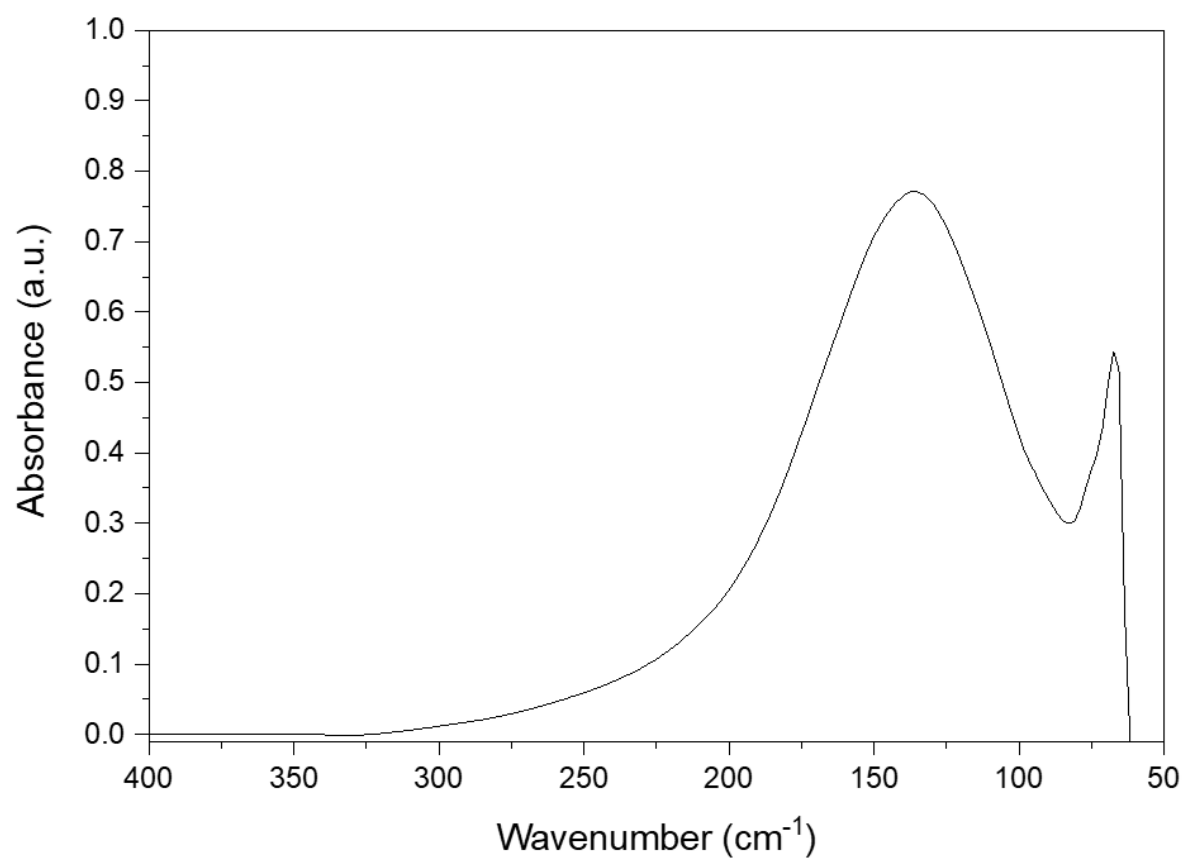
**Figure S1** Cryogenic DSC results of  $[\text{Ag}(\text{NH}_3)_2]\text{ClO}_4$



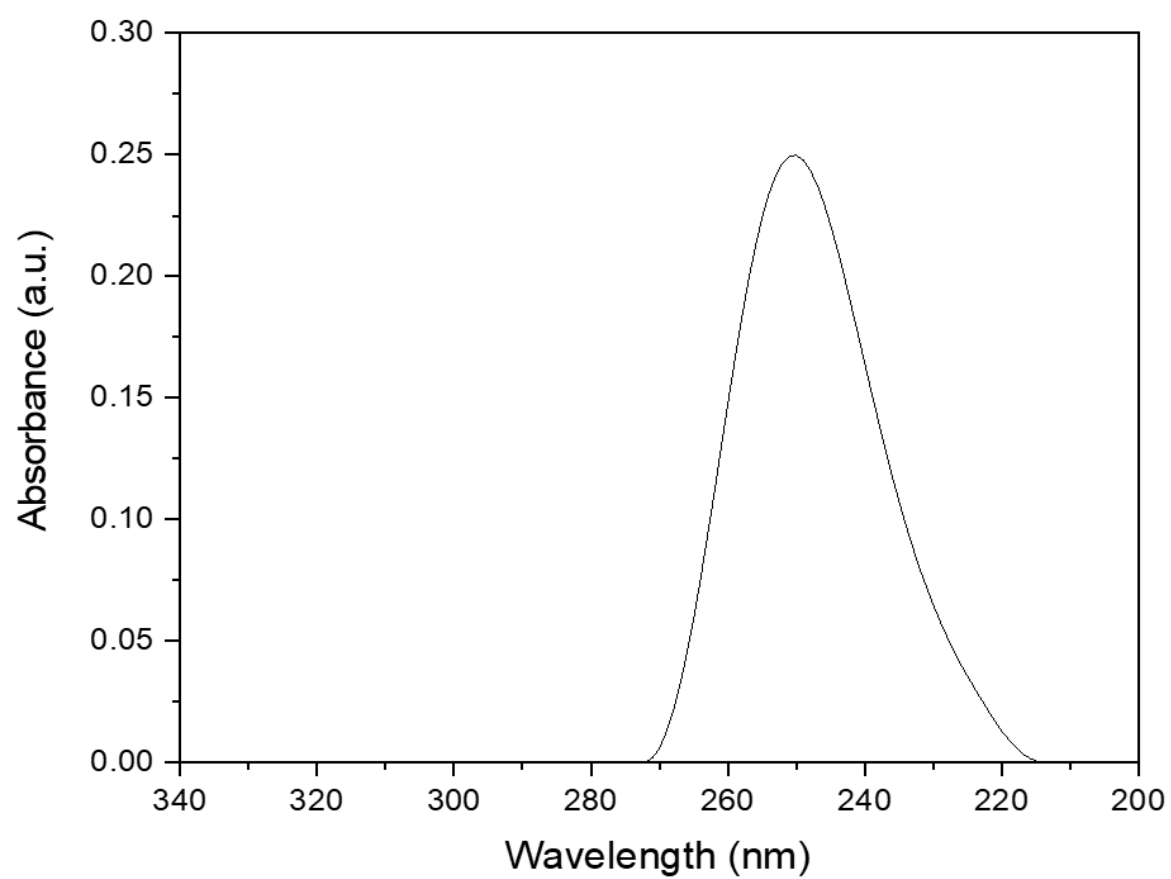
**Figure S2 (a) and (b)** The hindered rotations ( $R_{xyz}$ )( $F_1$ ) and translations ( $T_{xyz}$  ( $F_2$ )) of perchlorate ion in the polymorphs of  $[Ag(NH_3)_2]ClO_4$



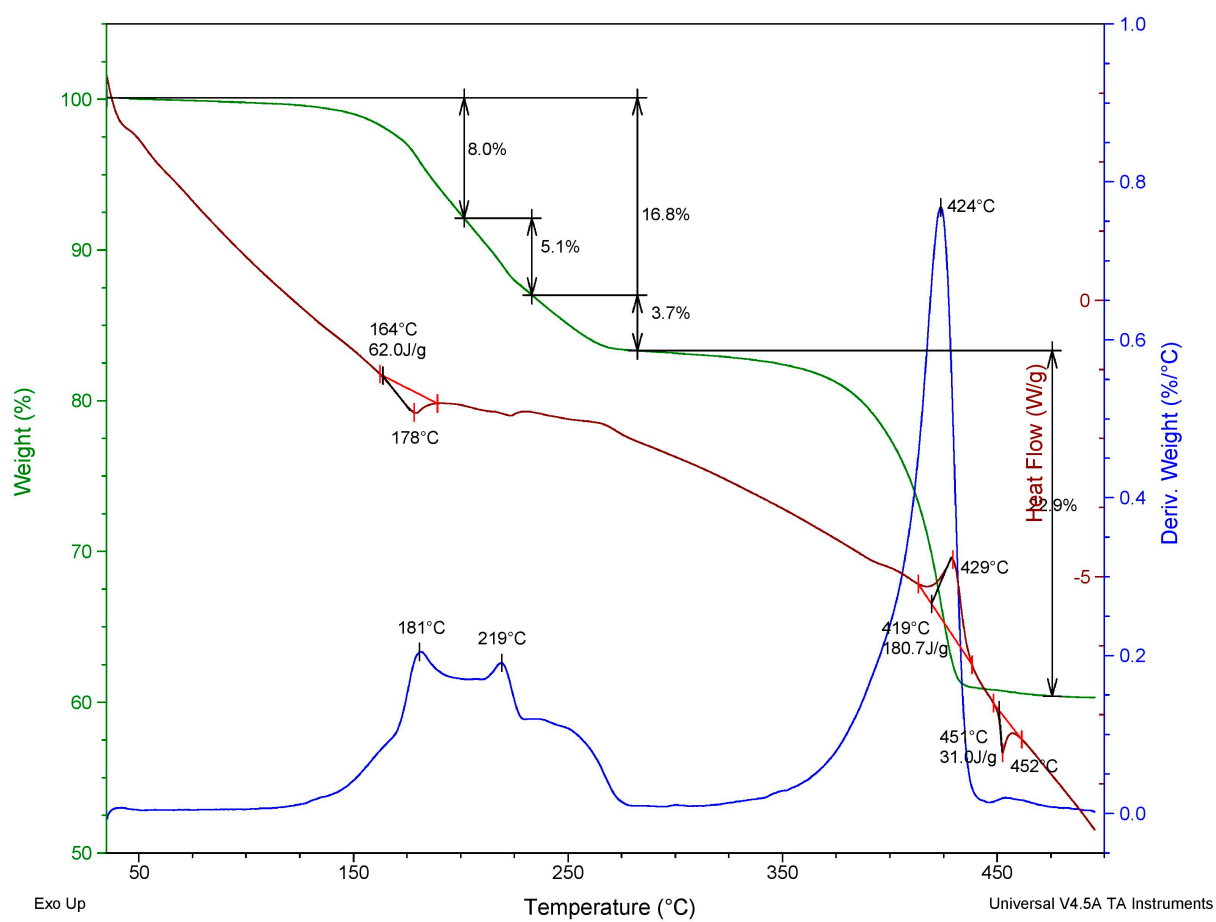
**Figure S3(a) and (b)** External vibrational modes ( $T_z(A_1)$ ,  $R_z(A_2)$  and  $T_{xy}(E)$  or  $R_{xy}(E)$ ) for ammonia in the polymorphs of  $[Ag(NH_3)_2]ClO_4$



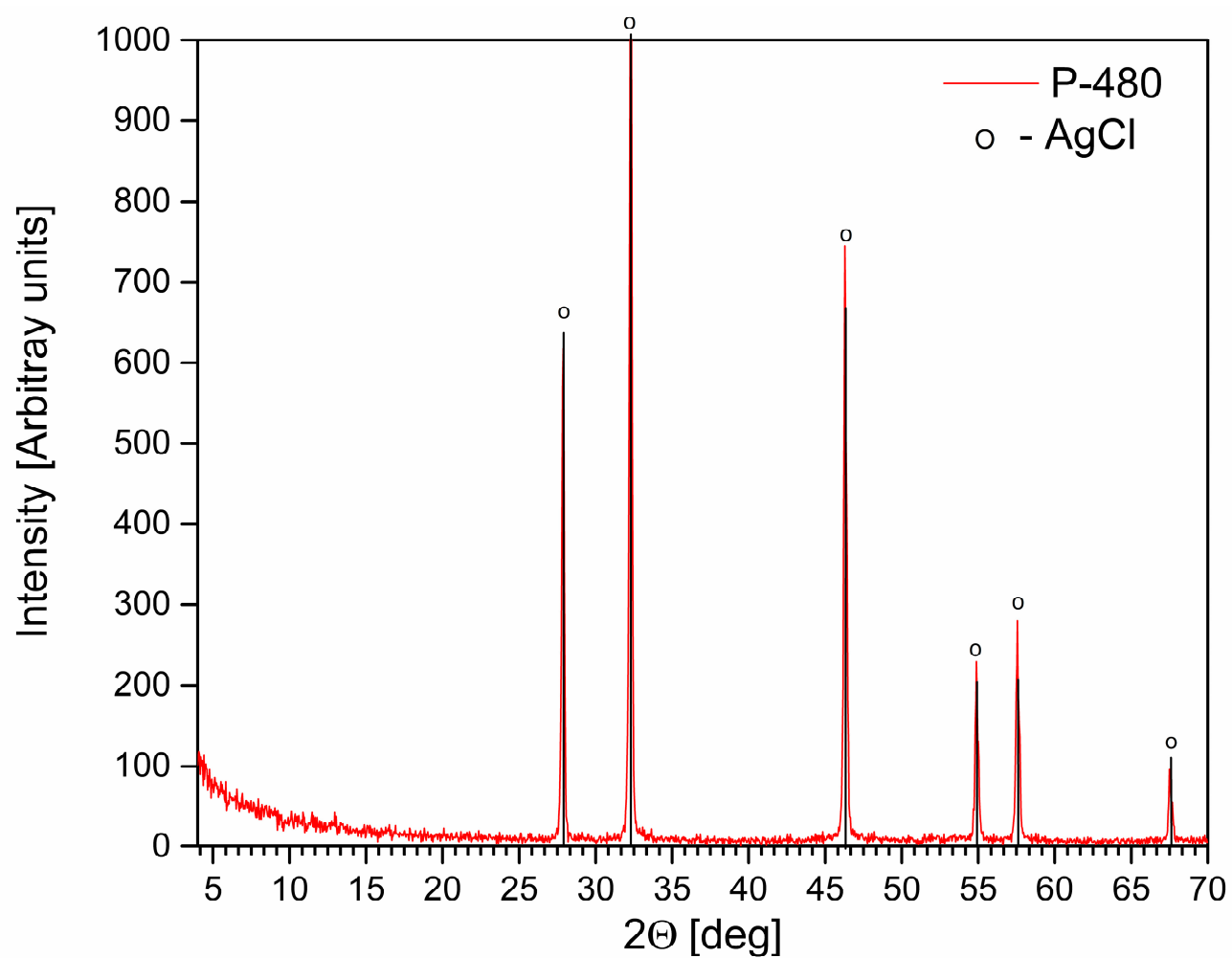
**Figure S4** The far-IR spectra of compound **1-O**



**Figure S5** The UV spectra of complex **1**

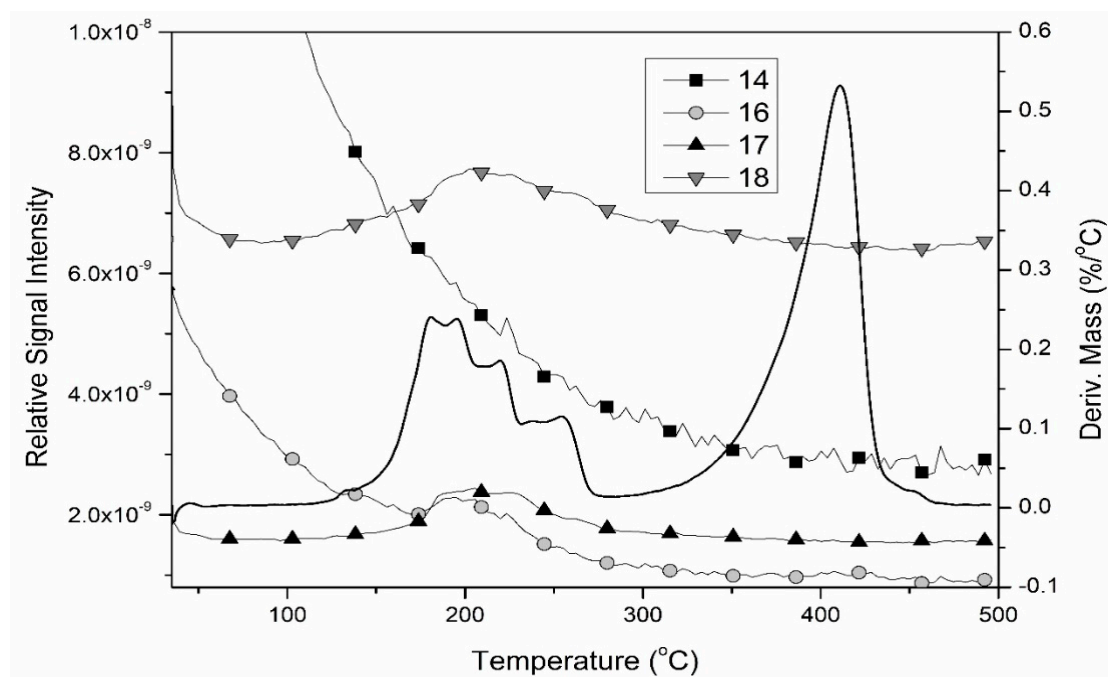


**Figure S6** TG-DTG-DSC results of compound **1** in air

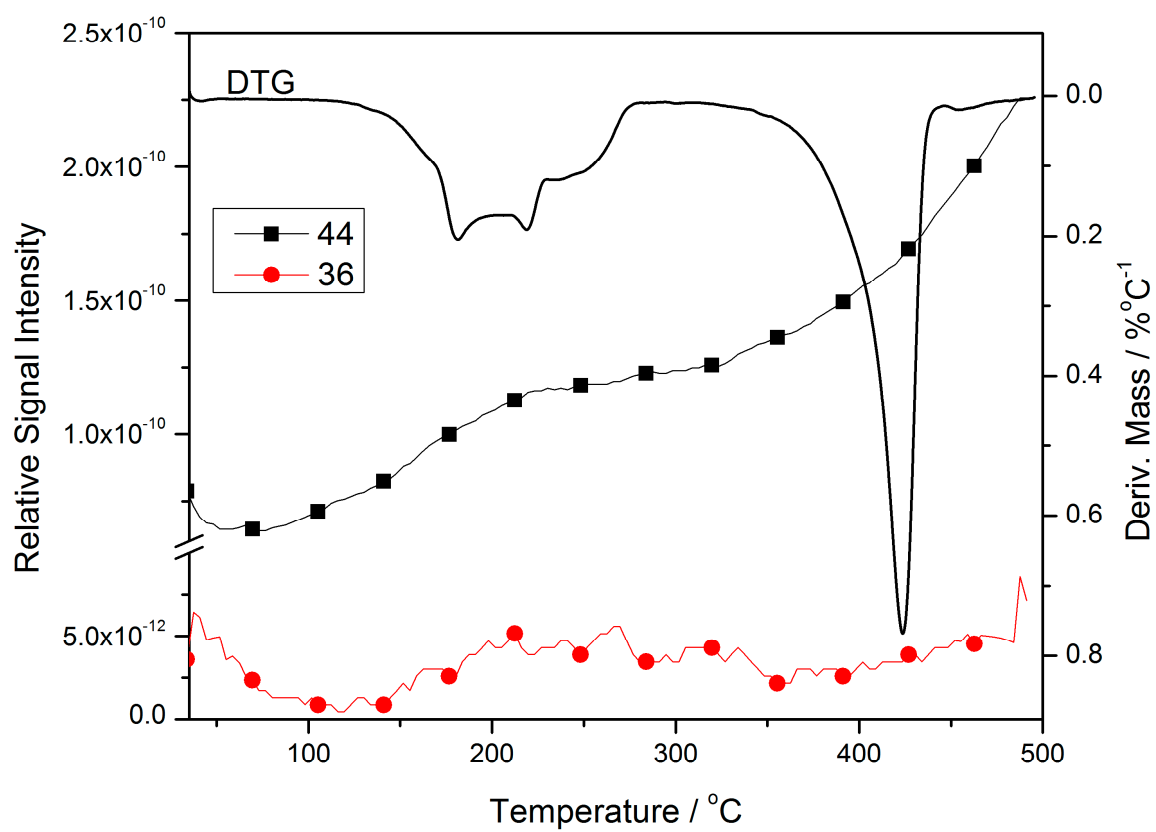


**Figure S7** The powder X-ray diffractogram of **P-480**

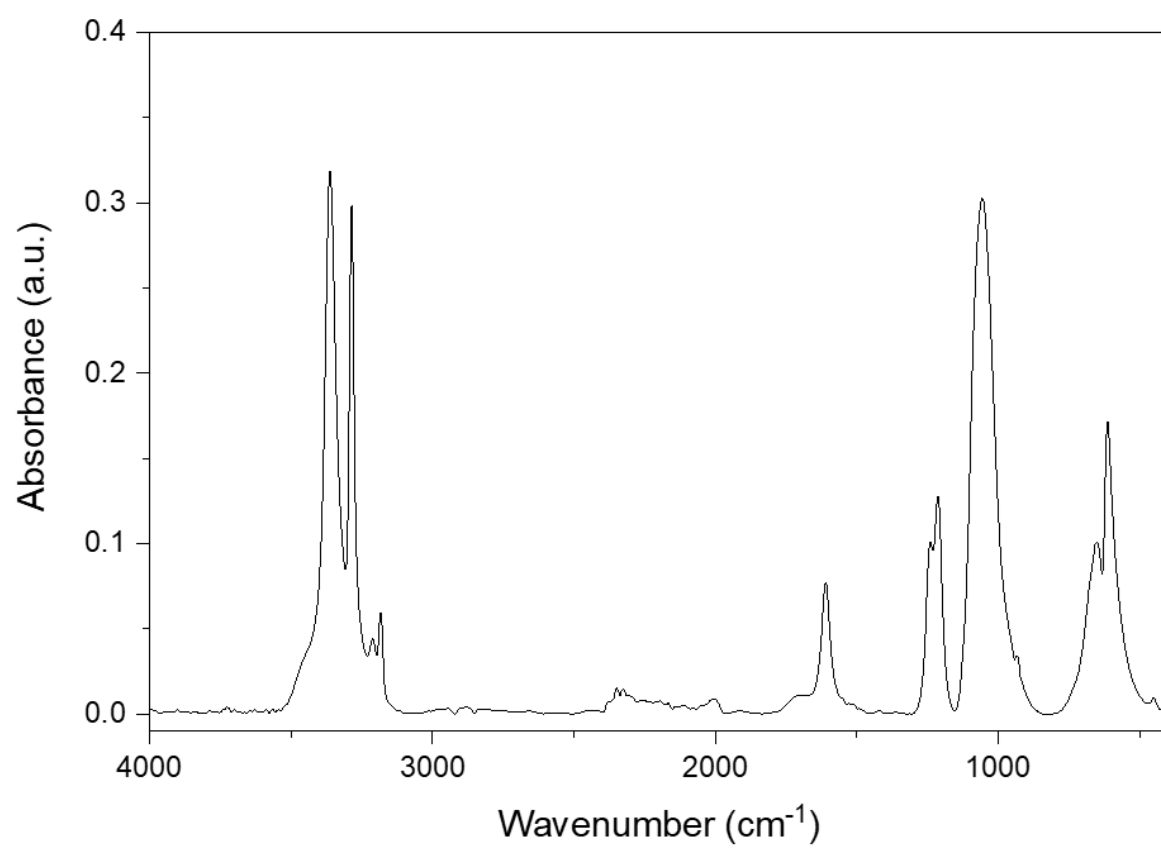




**Figure S8** TG-MS of compound **1** in inert atmosphere, formation of  $m/z=14$ ,  $m/z=16$ ,  $m/z=17$ ,  $m/z=18$ .

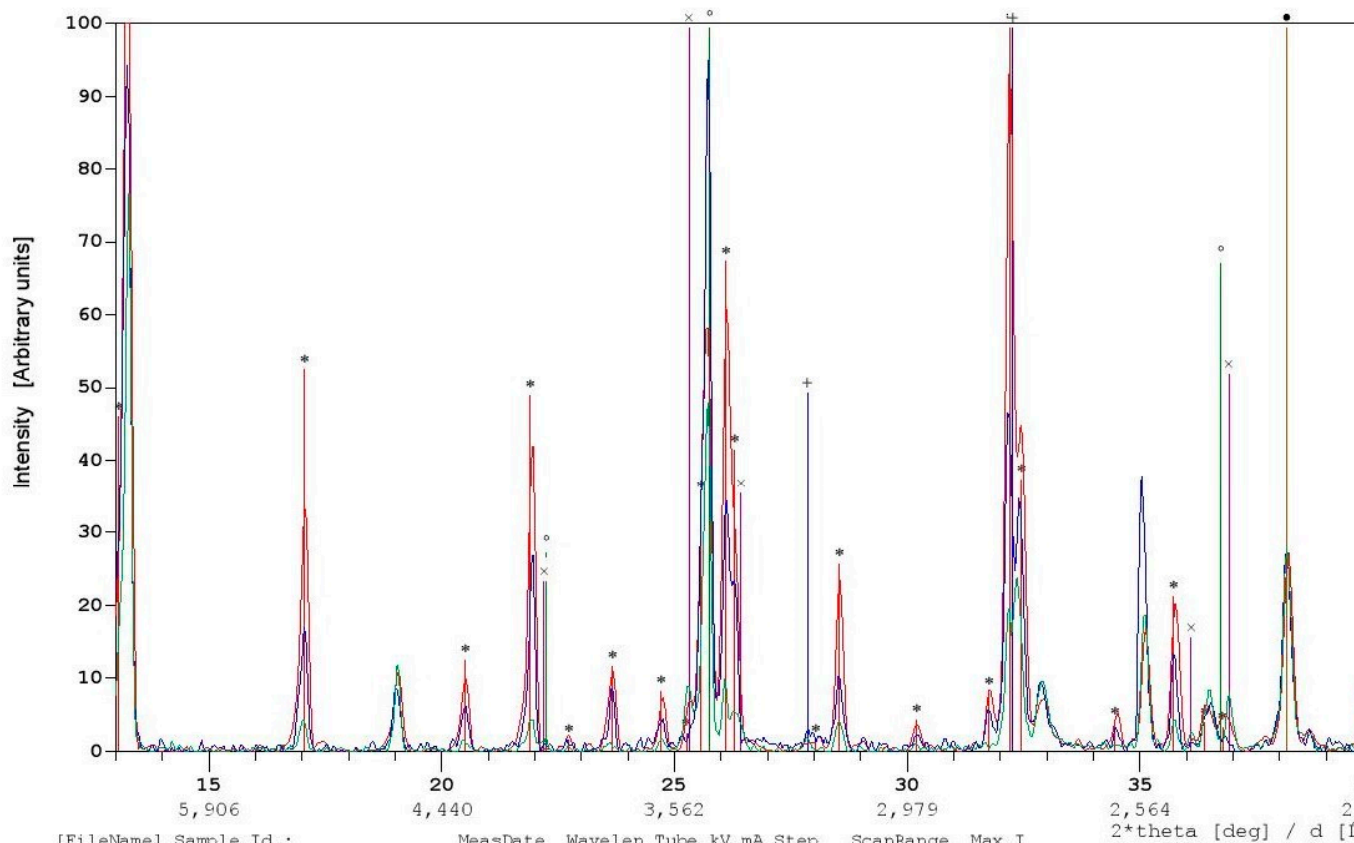


**Figure S9** TG-MS of compound **1** in air atmosphere, formation of m/z=44



**Figure S10** IR spectrum of **I-240** intermediate

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[FileName]	Sample Id.:	MeasDate	Wavelen	Tube	kV	mA	Step	ScanRange	Max.I
[aqam2pc-]	AgClO4/240C/1h/day2	02-25-2020	1,54186	Cu	40	35	0,04	4,0-70,0	712
[aqam2pc-]	AgClO4/240/1h/day3	02-26-2020	1,54186	Cu	40	35	0,04	3,9-69,9	612
[aqam2pc-]	AgCl 240c/1h/day3	03-02-2020	1,54186	Cu	40	35	0,04	4,1-70,1	594

Reference patterns:

*85-0194	apch	Ag perchlorate hydrate	Ag(ClO4) (H2O)
+31-1238	AgCl	Chlorargyrite, syn	AgCl
°76-0083	AClx	Silver perchlorate, cubic	AgClO4
x83-1414	Aqpc	Silver perchlorate, tetra	AgClO4
●04-0783	Ag4F	Silver, syn	Ag

**Figure S11** XRD of I-240 intermediate on storage for 3 days