# Supporting Information

## Hydrothermal Synthesis, Crystal Structures, and X-ray Photoelectron Spectroscopy of Lead Tellurium(IV) and Tellurium(VI) Oxycompounds: $Ba_3PbTe_6O_{16}$ and $Na_2Pb_9(\mu_6\text{-}O)_2(Te_2O_{10})_2$

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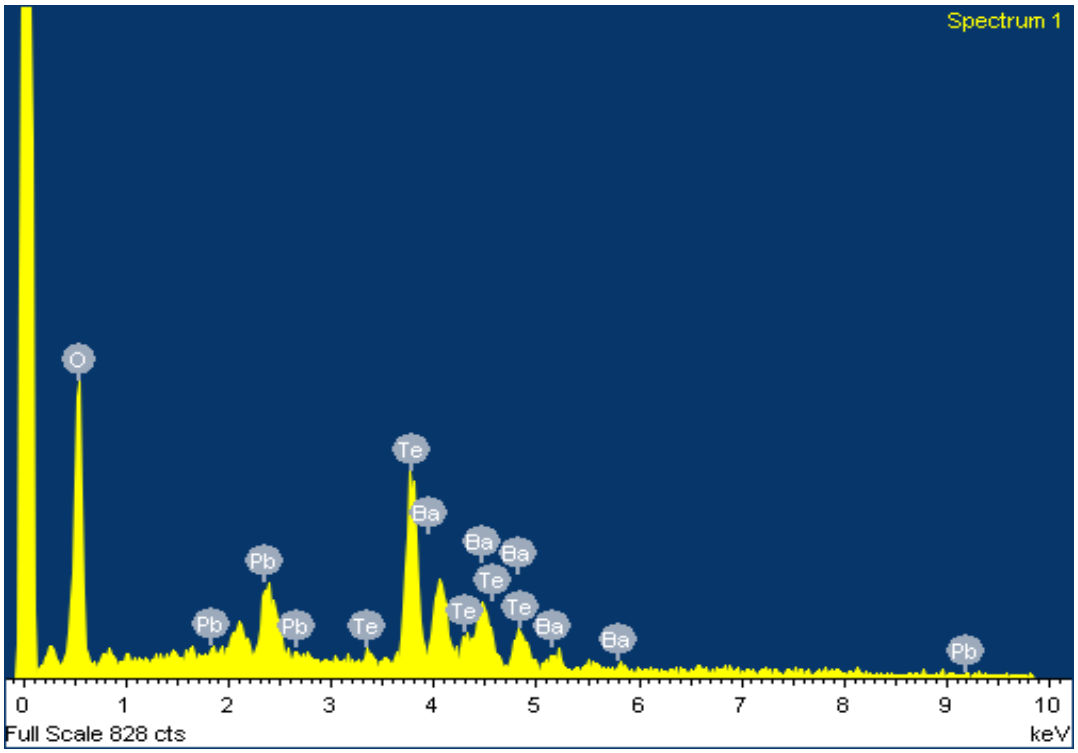



## EDS

| Spectrum | O | Ba | Te | Pb |
|---|---|---|---|---|
| Spectrum 1 | 70.96 | 8.56 | 17.38 | 3.1 |
| Spectrum 2 | 69.76 | 8.86 | 18.23 | 3.14 |
| Mean | 70.36 | 8.71 | 17.805 | 3.12 |

Atomic%

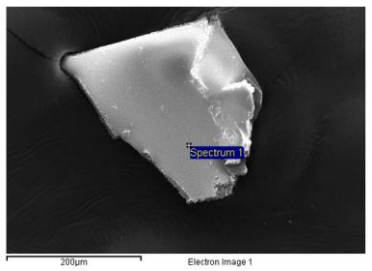
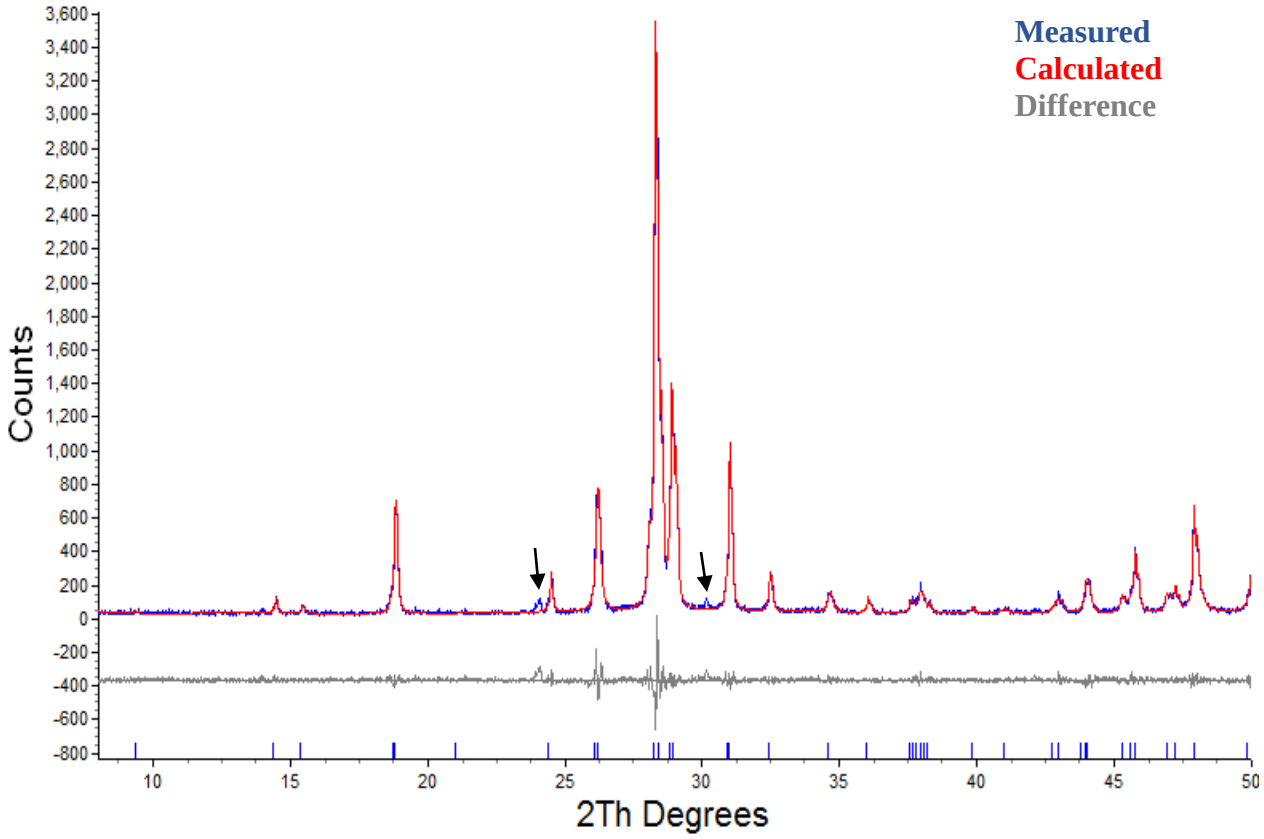
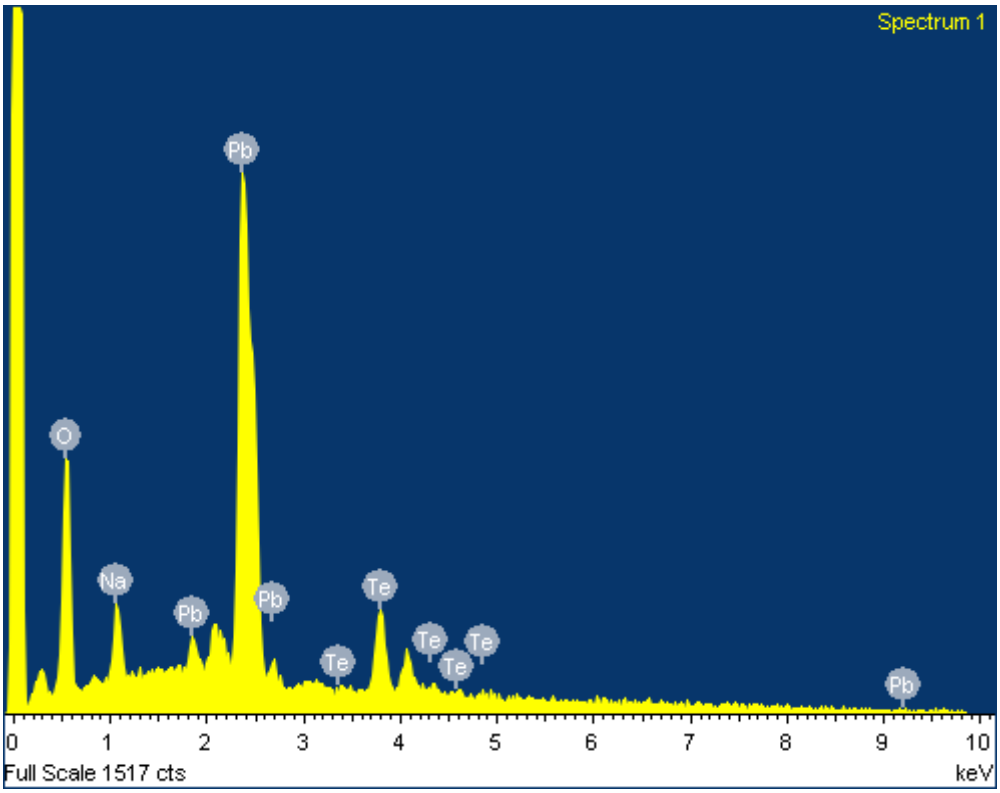



Figure S1. Energy dispersive X-ray spectroscopy analysis on a crystal of $Ba_3PbTe_6O_{16}$.




| | | Value |
|---|---|---|
| | GOF | 1.42 |
| | Rexp | 9.64 |
| | Rwp | 13.70 |
| | Rp | 9.62 |
| | Rexp-dash | 1.10 |
| | Rwp-dash | 1.56 |
| | Rp-dash | 1.86 |
| | Weighted Durbin Watson | 1.28 |

Figure S2. Pawley fit of the powder diffraction data to the structure of $Ba_3PbTe_6O_{16}$. The small peaks marked with an arrow correspond to the impurity $Ba_3Te_4O_{11}$.




## EDS

| Spectrum | O | Na | Te | Pb |
|---|---|---|---|---|
| Spectrum 1 | 70.53 | 7.96 | 6.68 | 14.82 |
| Spectrum 2 | 74.59 | 8.22 | 5.77 | 11.41 |
| Mean | 72.56 | 8.09 | 6.23 | 13.12 |

Atomic%

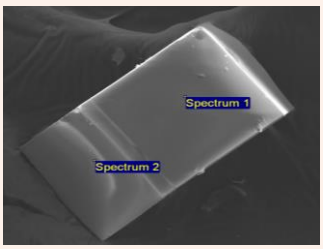
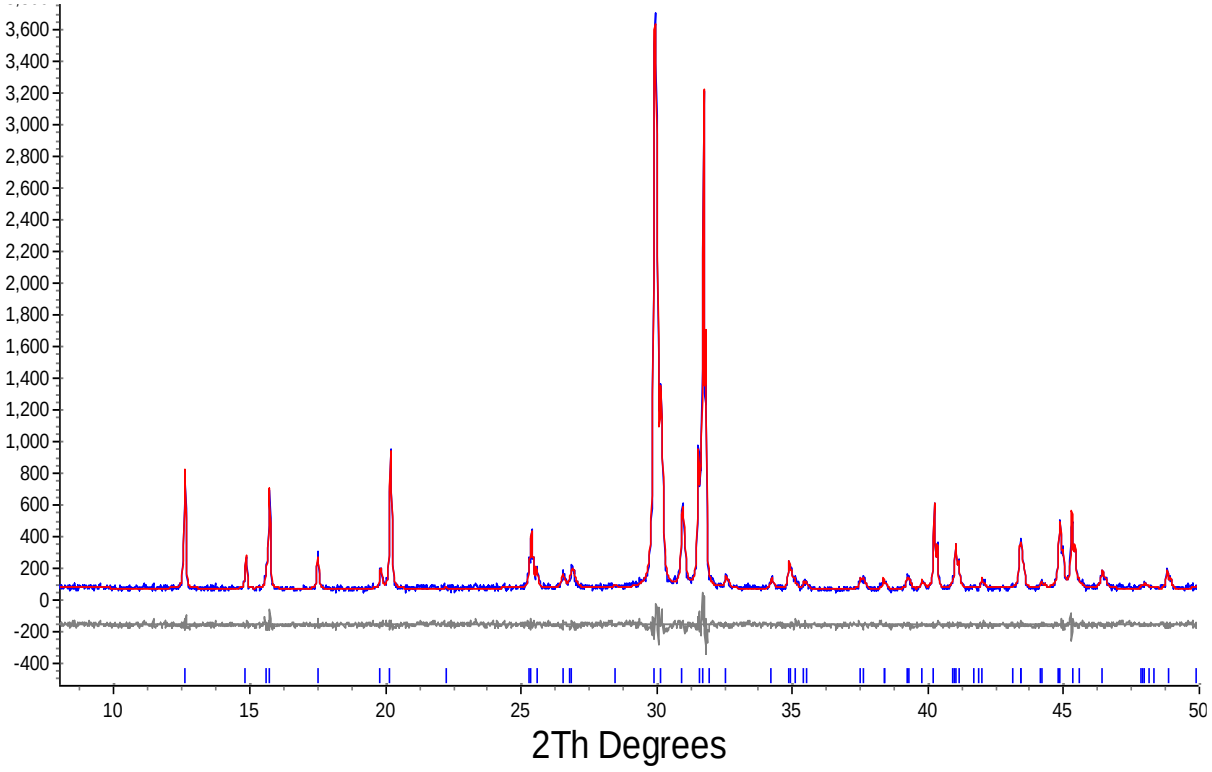



Figure S3. Energy dispersive X-ray spectroscopy analysis on a crystal of $Na_2Pb_9(\mu_6\text{-}O)_2(Te_2O_{10})_2$




All range dependent | Rwps | Path | Display | Rpt/Text

| | Value |
|---|---|
| GOF | 1.23 |
| Rexp | 8.37 |
| Rwp | 10.25 |
| Rp | 7.66 |
| Rexp-dash | 9.49 |
| Rwp-dash | 11.62 |
| Rp-dash | 9.02 |
| Weighted Durbin Watson | 1.63 |

Figure S4. Pawley fit of the powder diffraction data to the structure of $Na_2Pb_9(\mu_6\text{-}O)_2(Te_2O_{10})_2$.

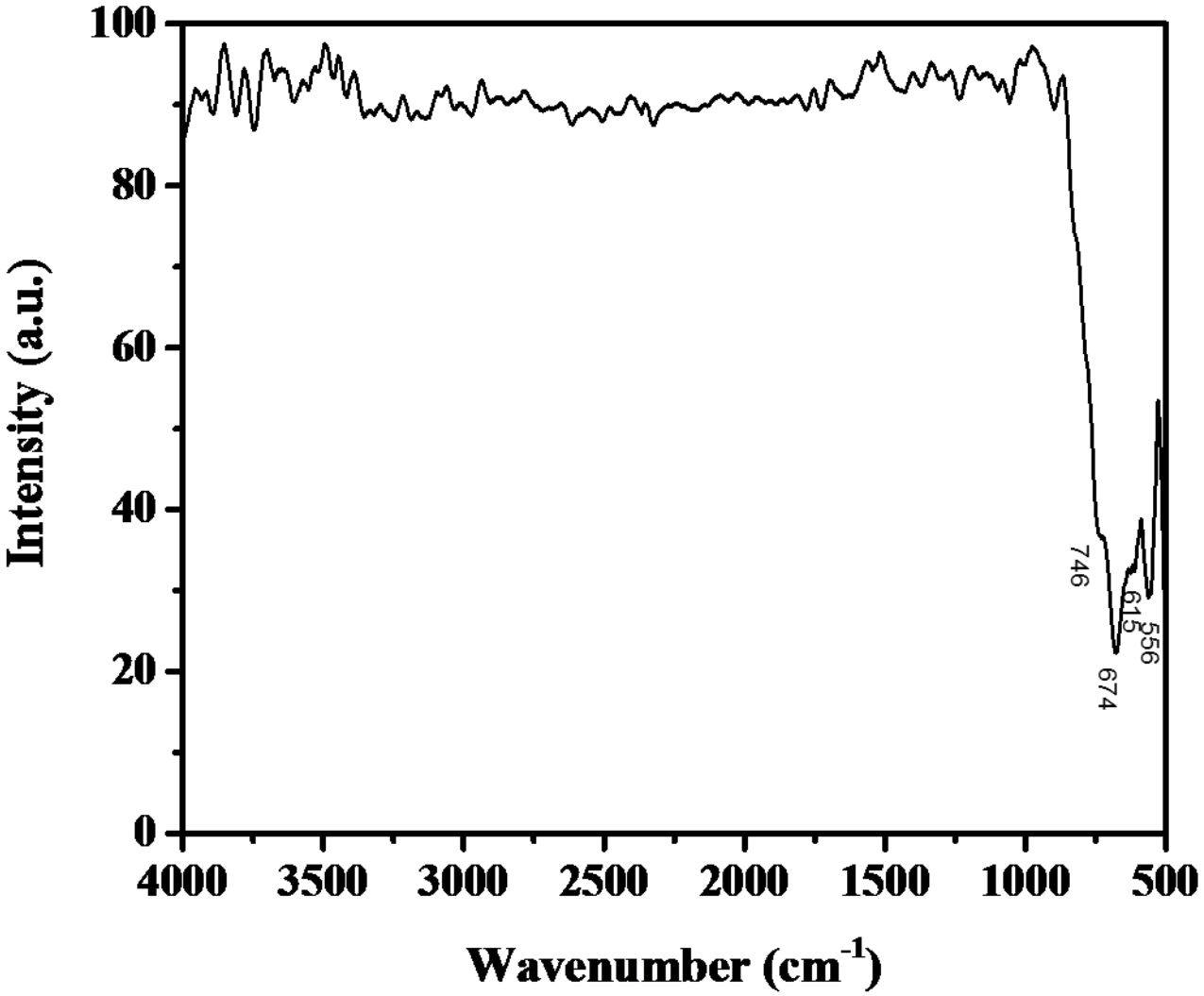



Figure S5. The infrared spectrum of $Ba_3PbTe_6O_{16}$ (KBr method).

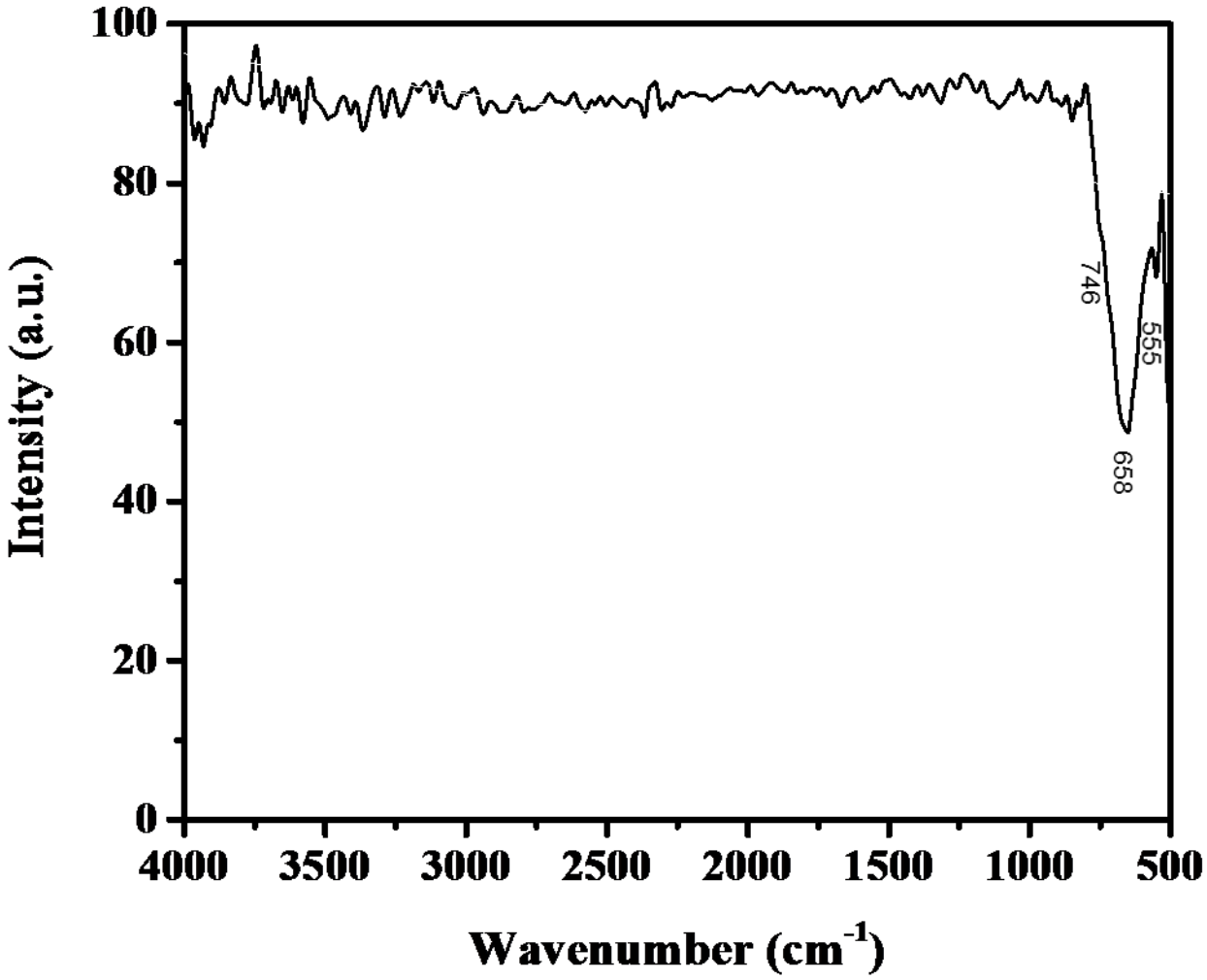



Figure S6. The infrared spectrum of $Na_2Pb_9(\mu_6\text{-}O)_2(Te_2O_{10})_2$ (KBr method).