

Electronic Supplementary Information (ESI)

**Facile synthesis of tellurium nano- and microstructures by HCl traces in ionic liquid**

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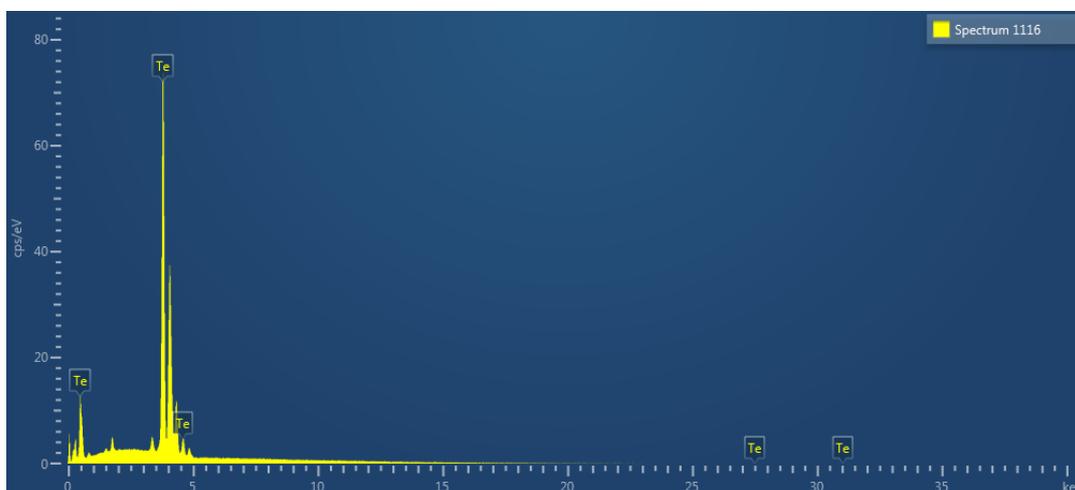
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**Table S1.** List of tested non-polar, polar aprotic, and polar protic solvents.

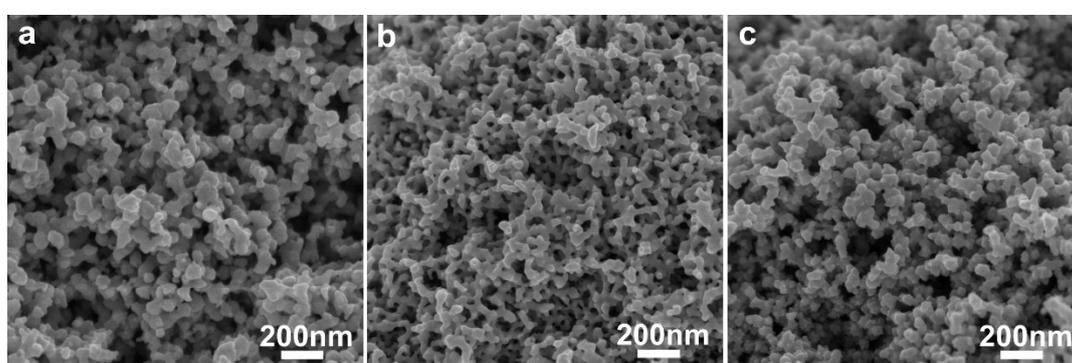
Water	H <sub>2</sub> O	Acetic acid	CH <sub>3</sub> CO <sub>2</sub> H
Ethanol	CH <sub>3</sub> CH <sub>2</sub> OH	Propanoic acid	CH <sub>3</sub> CH <sub>2</sub> CO <sub>2</sub> H
<i>n</i> -Butanol	CH <sub>3</sub> (CH <sub>2</sub> ) <sub>3</sub> OH	<i>n</i> -Hexane	CH <sub>3</sub> (CH <sub>2</sub> ) <sub>4</sub> CH <sub>3</sub>
<i>n</i> -Hexanol	CH <sub>3</sub> (CH <sub>2</sub> ) <sub>5</sub> OH	Toluene	C <sub>6</sub> H <sub>5</sub> CH <sub>3</sub>
<i>n</i> -Octanol	CH <sub>3</sub> (CH <sub>2</sub> ) <sub>7</sub> OH	Chloroform	CHCl <sub>3</sub>
<i>n</i> -Decanol	CH <sub>3</sub> (CH <sub>2</sub> ) <sub>9</sub> OH	Diethyl ether	(CH <sub>3</sub> CH <sub>2</sub> ) <sub>2</sub> O
Ethylene glycol	(CH <sub>2</sub> OH) <sub>2</sub>	Tetrahydrofuran	C <sub>4</sub> H <sub>8</sub> O
Allyl alcohol	CH <sub>2</sub> =CHCH <sub>2</sub> OH	Ethyl acetate	CH <sub>3</sub> CO <sub>2</sub> CH <sub>2</sub> CH <sub>3</sub>
Propargyl alcohol	HC≡CCH <sub>2</sub> OH	Acetone	CH <sub>3</sub> COCH <sub>3</sub>
Formamide	NH <sub>2</sub> CHO	Dimethylformamide	(CH <sub>3</sub> ) <sub>2</sub> NCHO
<i>N</i> -Methylformamide	CH <sub>3</sub> NHCHO	Acetonitrile	CH <sub>3</sub> CN
Formic acid	HCO <sub>2</sub> H	Dimethyl sulfoxide	CH <sub>3</sub> SOCH <sub>3</sub>



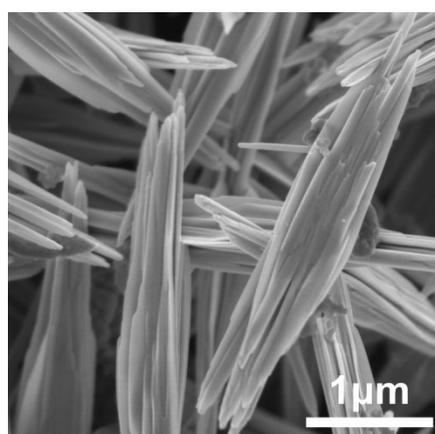
**Fig. S1** EDX spectrum of obtained Te particles using ethanol as the protic solvent.



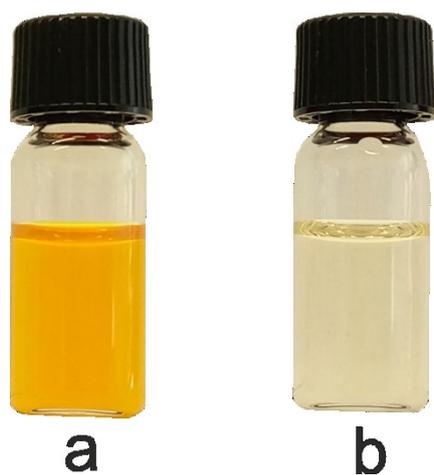
**Fig. S2** Photographs of Te precipitates when the Te solution in [P<sub>66614</sub>]Cl/ethylene glycol phases (a), and Te solution in [P<sub>66614</sub>]Cl/water phases (b) were placed statically overnight, respectively.



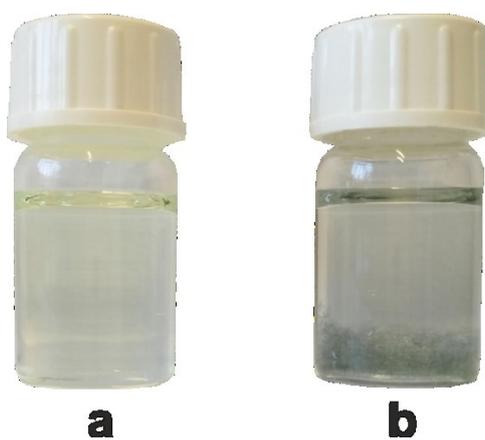
**Fig. S3** SEM images of obtained Te nanoparticles using formic acid (a), acetic acid (b), or propionic acid (c) as the protic solvent.



**Fig. S4** SEM image of obtained Te microstructures using water as the protic solvent.



**Fig. S5** Photographs of Te solution in  $[P_{66614}][N(CN)_2]$  (a) or  $[P_{66614}][\text{decanoate}]$  (b) in *n*-butanol.



**Fig. S6** Photographs of Te solution in  $[P_{66614}]\text{Cl}$ . 12 mg Te powder and 4 g  $[P_{66614}]\text{Cl}$  were used for the dissolution test. (a) 4 g dried commercial  $[P_{66614}]\text{Cl}$ . (b) One drop of HCl (37 wt%) was added to 4 g dried commercial  $[P_{66614}]\text{Cl}$ .