Electronic Supplementary Material (ESI) for Analyst.

Characteristic Fingerprint Spectrum of Neurotransmitter Norepinephrine with Broadband Terahertz Time-Domain Spectroscopy

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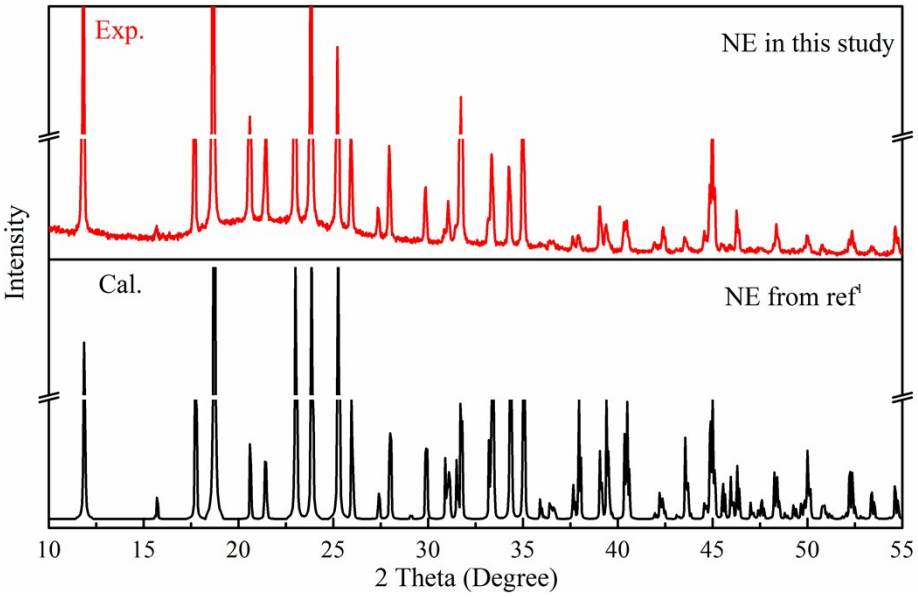

Fig. S1 The experimental and simulated PXRD patterns of NE.

As shown in Fig. S1, PXRD was carried out to check the crystal structure of NE sample. And the result manifests that the experimental PXRD pattern of NE agrees well with the calculated pattern from the ref.[1]

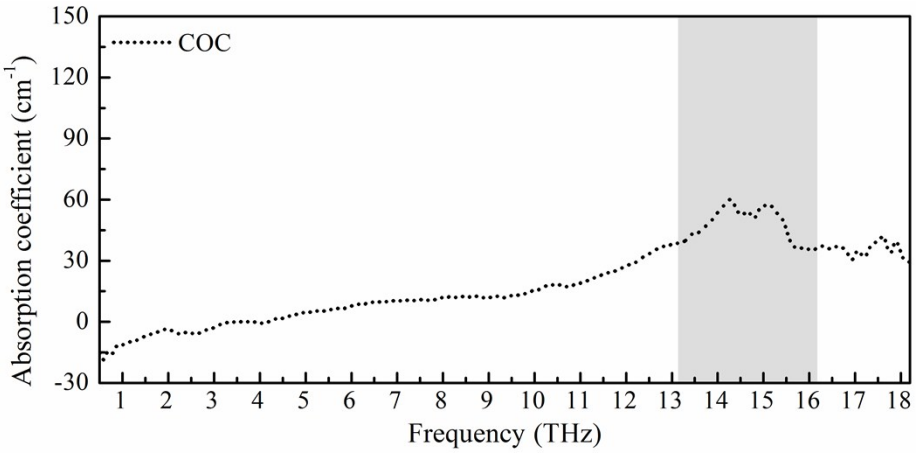

Fig. S2 The broadband THz absorption spectrum of COC between 0.5 and 18.2 THz.

Fig. S2 shows the THz spectrum of COC obtained by the broadband air-plasma THz system.

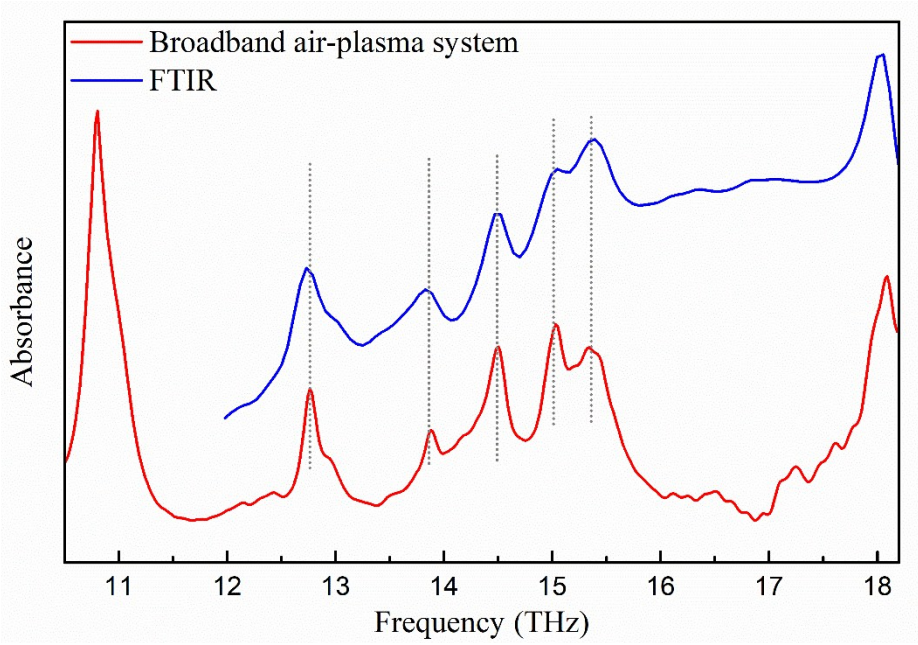

Fig. S3 The comparison of the NE spectra obtained by the broadband air-plasma THz system (red) and FTIR (blue).

Fig. S3 shows the THz spectrum of NE from 10.5 to 18.2 THz obtained by the broadband air-plasma THz system (COC as substrate) and the FTIR spectrum of NE from 12 to 18.2 THz (KBr as substrate). We can see that the spectra from the broadband air-plasma THz system and FTIR in the 12-18.2 THz region covered by both systems are consistent.

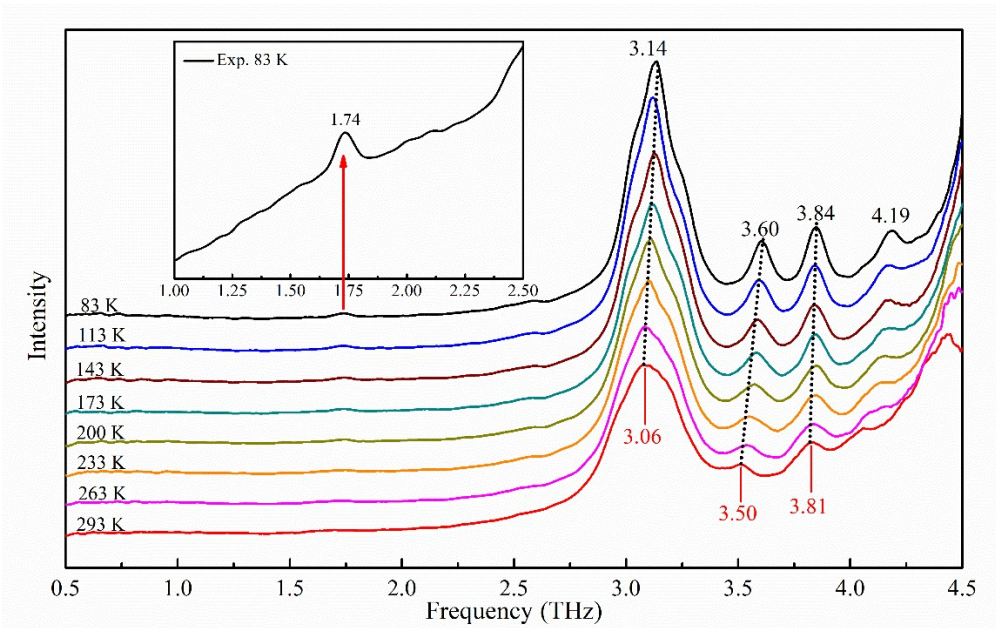

Fig. S4 The temperature effect on the absorption spectra of NE.（The inset shows the absorption peak at 1.74 THz）

Eight spectra were picked at regular intervals and were presented in Fig. S4. As the

temperature was reduced the absorption peaks become sharper and more obvious.

Supporting reference

(1) A. Andersen, *Acta Chemica Scandinavica B*, 1975, **29**, 871-876.