

# Tetramethylammonium Hydroxide (TMAH) as a Reagent for Complex Mixture Analysis by Negative Ion Electrospray Ionization Mass Spectrometry

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## Supporting Information

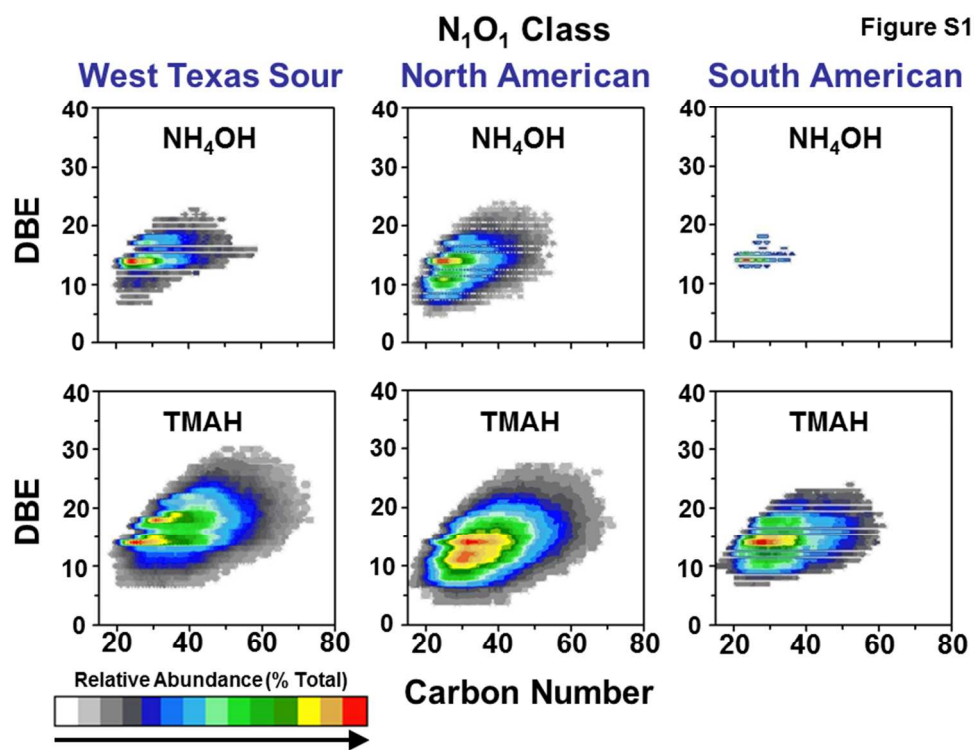
**Figure S1.** Isoabundance-contoured DBE versus carbon number plots for ions of the  $N_1O_1$  class for three crude oils, obtained by (-) ESI FT-ICR MS with  $NH_4OH$  (top) and TMAH (bottom).

**Figure S2.** Isoabundance-contoured DBE versus carbon number plots for ions of the  $N_1S_1$  class for three crude oils, obtained by (-) ESI FT-ICR MS with  $NH_4OH$  (top) and TMAH (bottom).

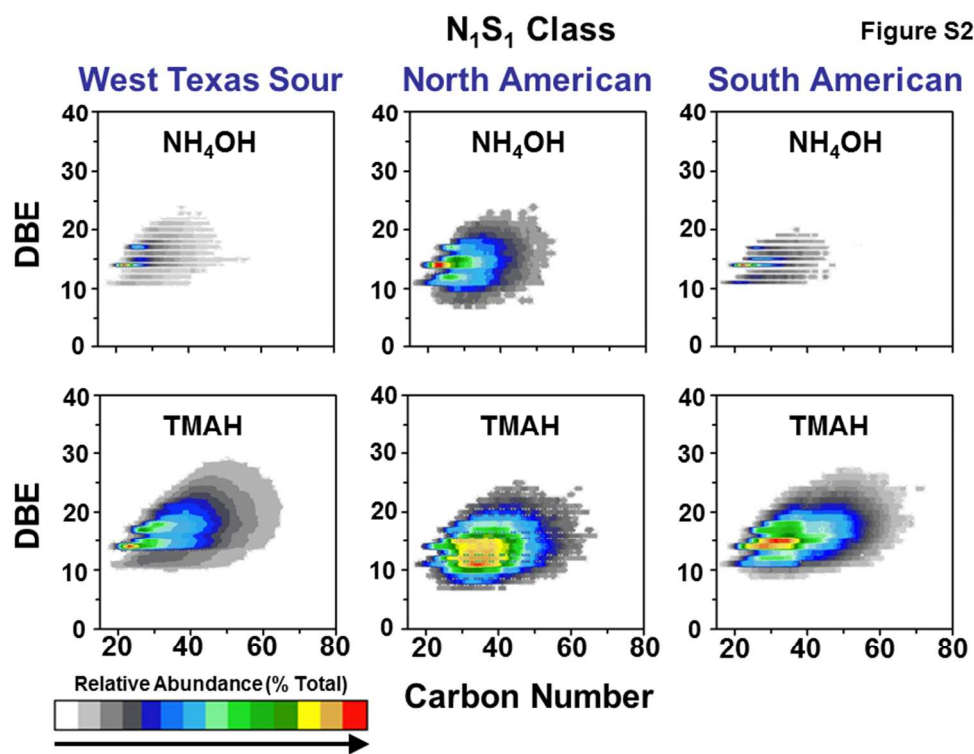
**Figure S3.** Isoabundance-contoured DBE versus carbon number plots for ions of the CH, NOS,  $N_1S_2$ ,  $N_2$ ,  $S_1$ , and  $S_2$  classes for West Texas light-sour crude, obtained by (-) ESI FT-ICR MS with TMAH.

**Figure S4.** Isoabundance-contoured DBE versus carbon number plots for ions of the SO and  $SO_2$  classes, obtained by (-) ESI FT-ICR MS with  $NH_4OH$  (top) and TMAH (bottom) for a North American blend crude oil.

**Figure S5.** Schematic diagram for the (-) ESI process. Positive ions are reduced in the emitter, thus providing negatively charged droplets. The current induced by the reduction is equivalent to current carried out by charged droplets and can be measured by a nano-ammeter (A).



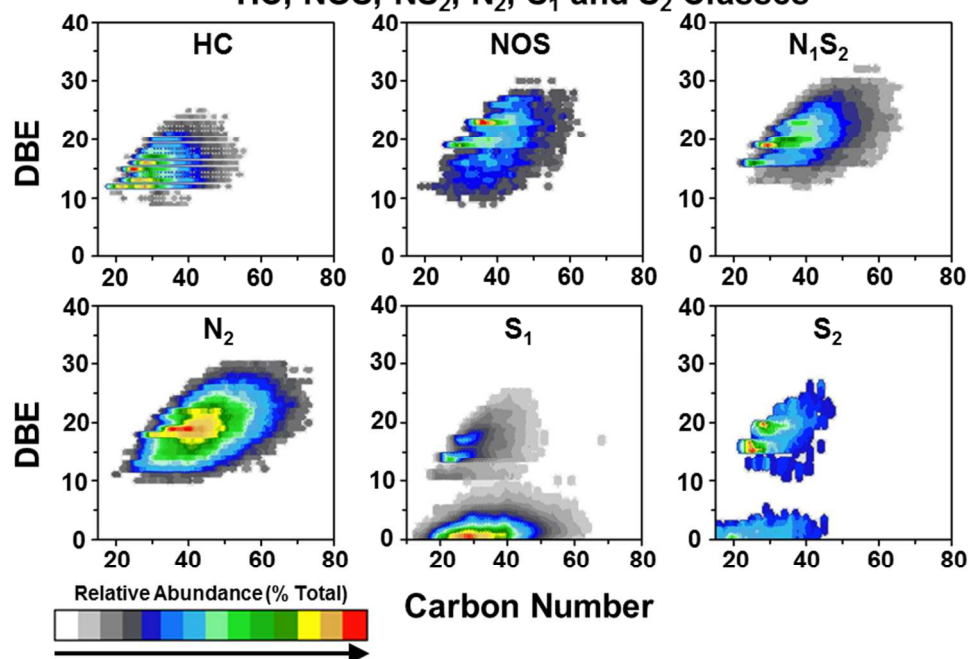
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254x190mm (96 x 96 DPI)

**West Texas Sour Crude with TMAH:**  
**HC, NOS, NS<sub>2</sub>, N<sub>2</sub>, S<sub>1</sub> and S<sub>2</sub> Classes**

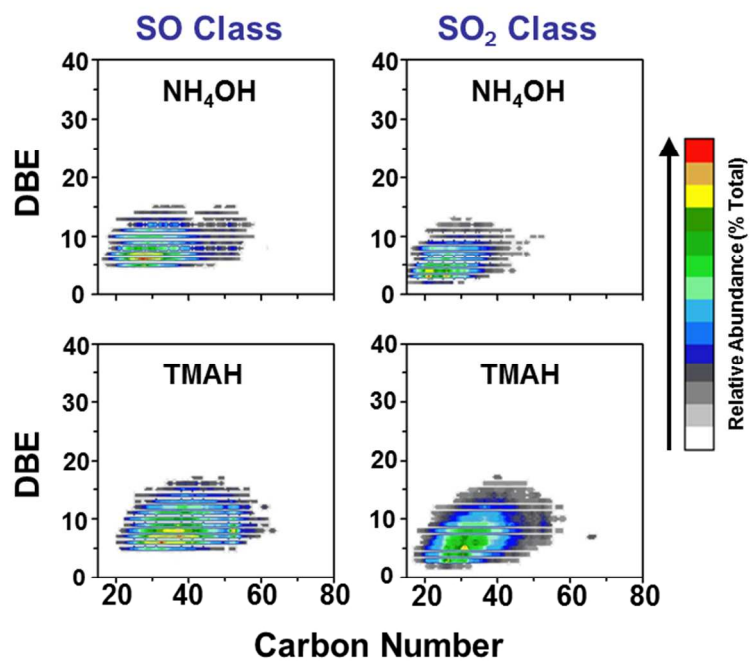
Figure S3



254x190mm (96 x 96 DPI)

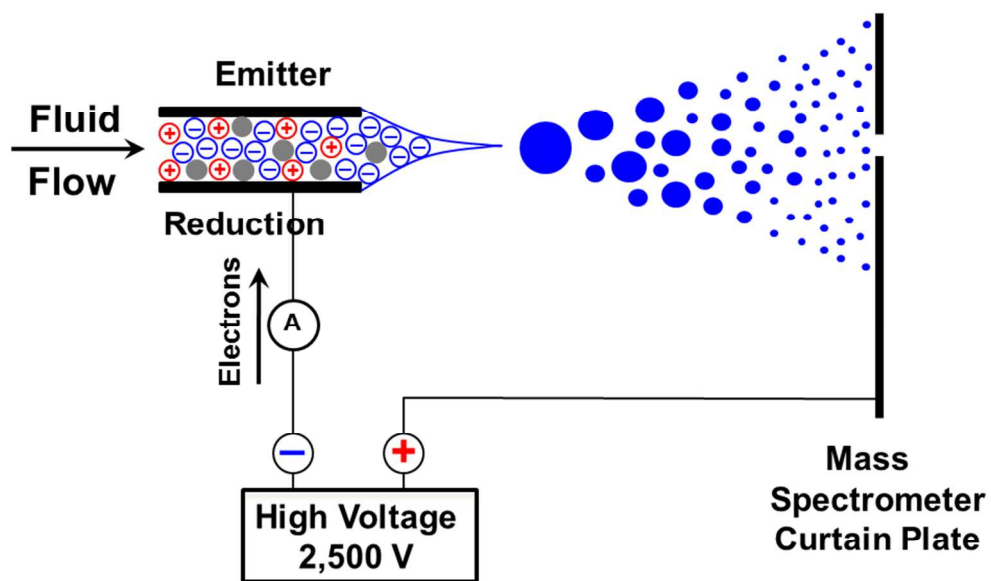
# North American Blend Crude Oil

Figure S4



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Figure S5



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