Hydrothermal Liquefaction Biocrude Compositions Compared to Petroleum Crude and Shale Oil

by

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Supporting Information

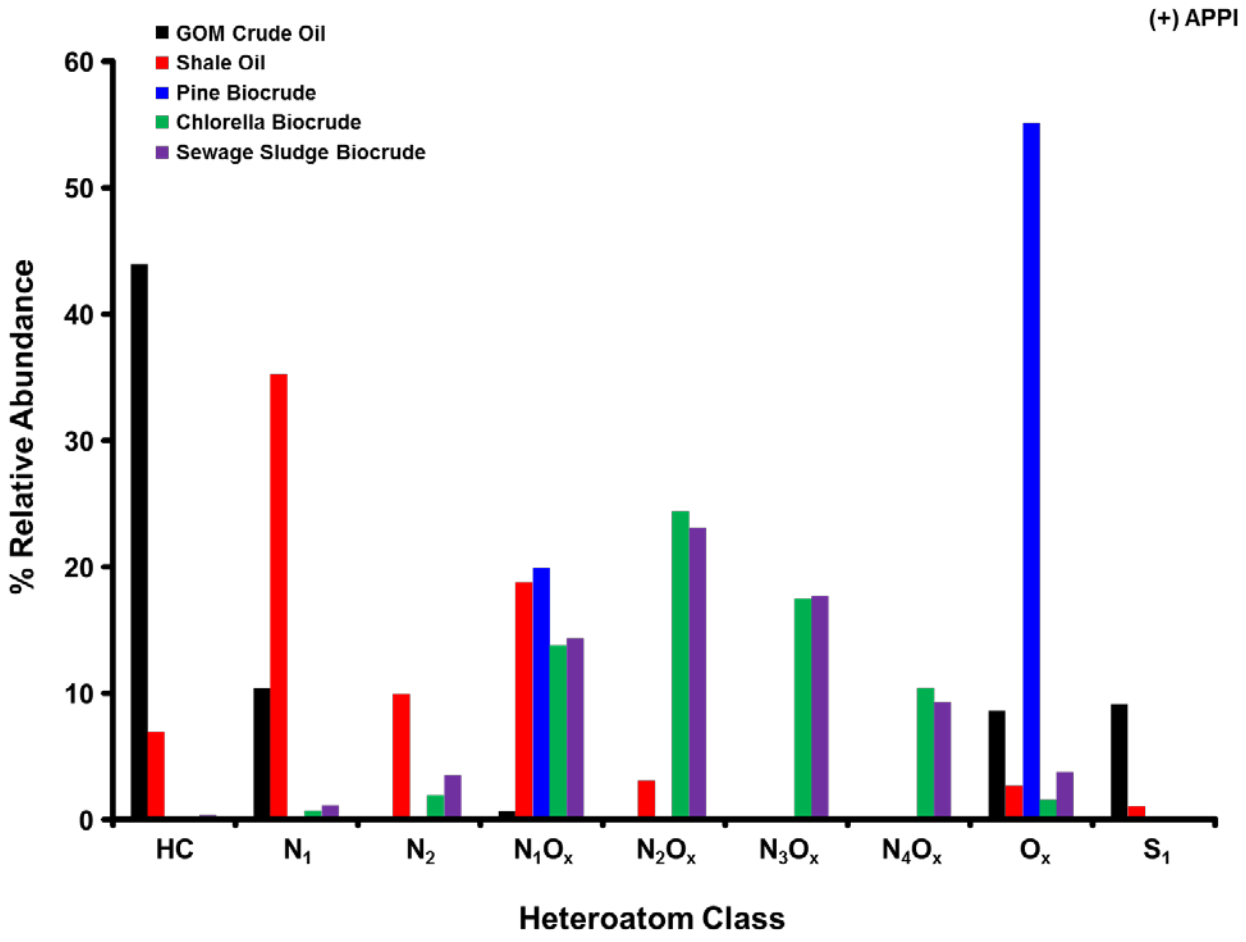

Figure S1: Heteroatom class distributions derived from the (+) APPI mass spectra of GOM crude oil, shale oil, pine HTL biocrude, *Chlorella* sp. HTL biocrude, and sewage sludge HTL biocrude.

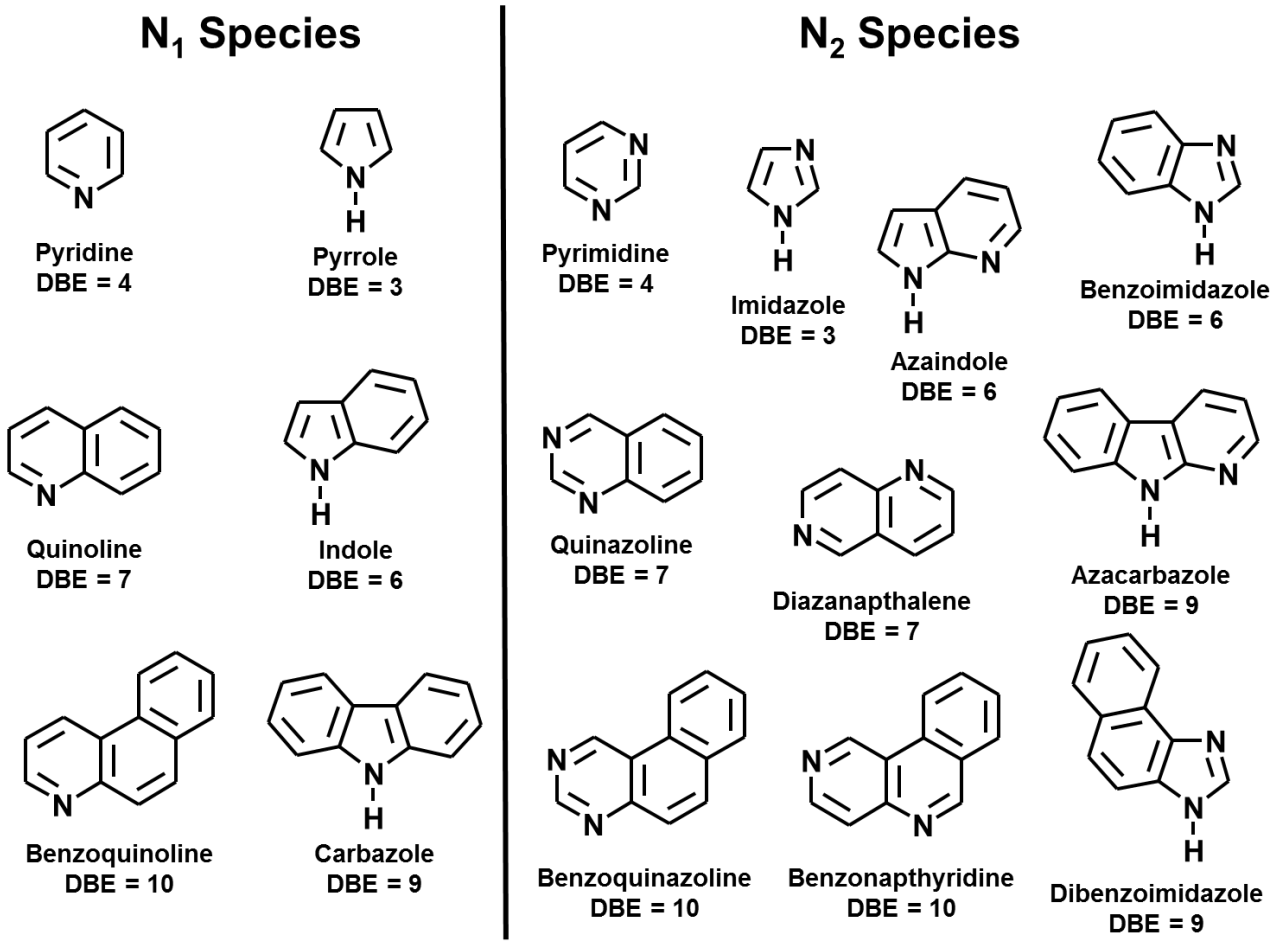

Figure S2: Possible core structure for N_1 and N_2 species.

Table S1. ICP-OES analysis of biocrudes derived from pine, *Chlorella* sp., and sewage sludge feedstocks.

Element (ppm)	Pine	*Chlorella* sp.	Sewage Sludge
Ag	<25	<20	<30
Al	29.69	21.07	64.85
As	<25	<20	<30
Ba	<20	<20	<30
Ca	40.94	30.79	<30
Cd	<20	<20	<30
Co	<20	<20	<30
Cr	<20	<20	<30
Cu	<20	21.94	<30
Fe	128.20	761.30	58.89
K	51.02	269.50	77.09
Mg	<20	<20	<30
Mn	<20	<20	<30
Na	606.60	945.25	56.89
Ni	<20	<20	<30
P	<20	<20	<30
Pb	<20	<20	<30
Re	<20	<20	<30
Sr	<20	<20	<30
V	<20	<20	<30
Y	<20	<20	<30
Zn	<20	<20	<30
Mo	<20	<20	<30
Si	28.14	49.72	55.28
Ti	<20	<20	<30
Au	<20	<20	<30
Pd	<20	<20	<30
Pt	<20	<20	<30
Rh	<20	<20	<30
S	152.80	5190.50	1902.17
Sn	<20	<20	<30
Zr	<20	<20	<30
Ru	<20	<20	<30