Supporting information

Microwave-induced low temperature pyrolysis of macroalgae for unprecedented hydrogen-enriched syngas production

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MIP accelerates the production of gases, but considerable differences in gas production in comparison with CP, make necessary to prolong the pyrolysis more time in the MW heating than in the case of the conventional heating.

Table 1S. Times (min) at which the gas production falls to 5 or 10 % of the maximum production.

	Time (min)						
	400CP	400MIP	400MIP-G	400MIP-C	600MIP	800CP	800MIP
5% of max. production	47	67	172	80	68	36	67
10% of max. production	39	52	140	69	62	29	52

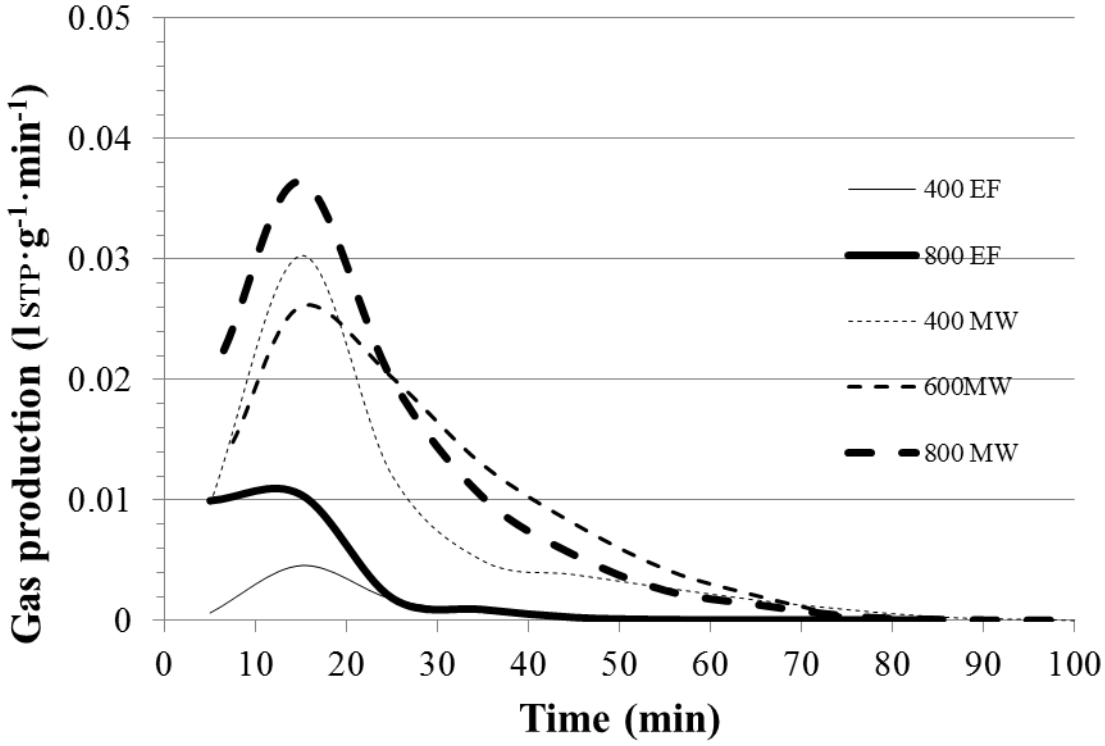

Fig. 1S. Production in each instant of the experiments of pyrolysis

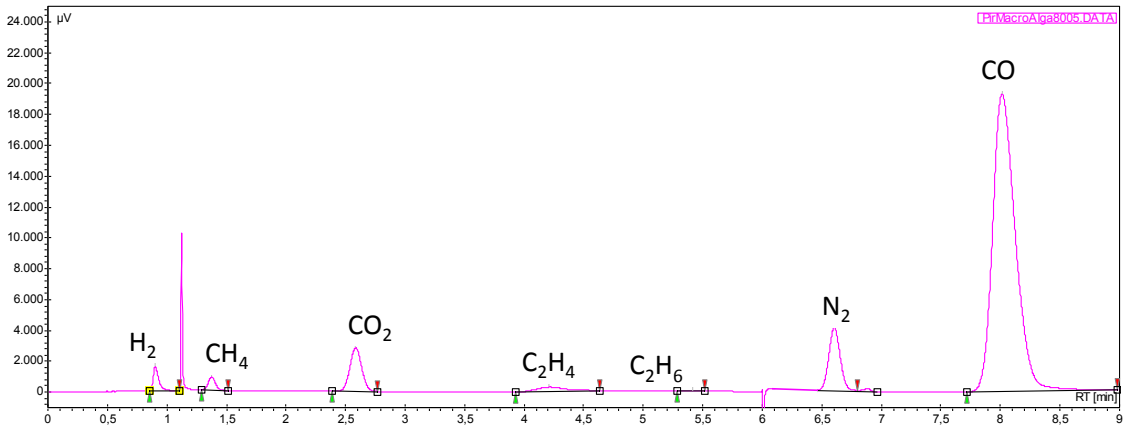

Figure 2S. Gas chromatogram obtained of one of the bags collected during the experiments.

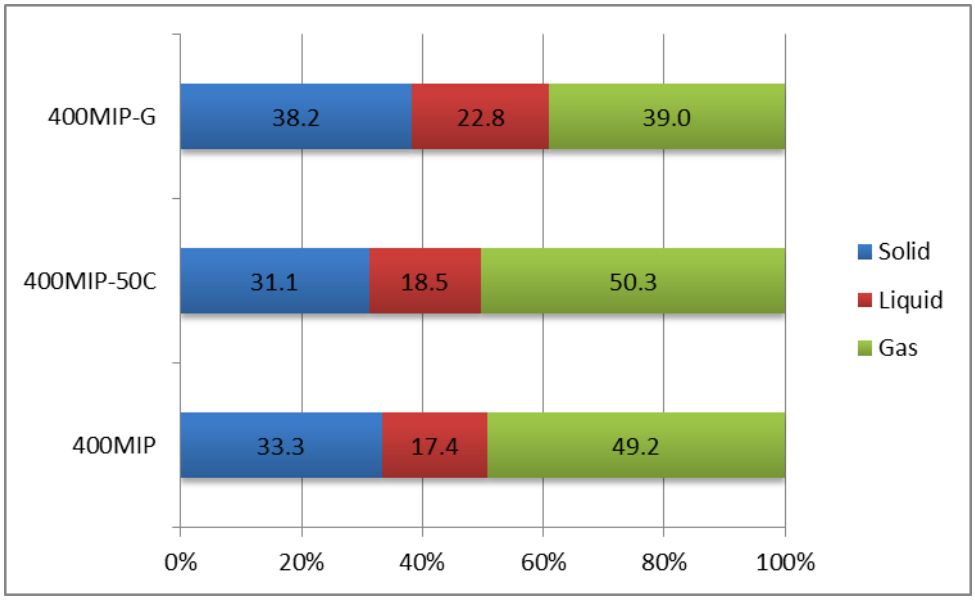

Figure 3S. Yields of the different fractions obtained in the MIP of algae at 400 ºC with different captors.

Table 2S. Detailed elemental analysis of the biochar generated after CP at 800ºC

Element	Sample in ppm
Li (ppm)	50
B (ppm)	210
Na (%)	2
Mg (%)	0.5
Al (ppm)	3032
Si (%)	1.49
P (%)	1
S (%)	3
K (%)	12
Ti (ppm)	106
Mn (ppm)	1546
Cu (ppm)	20
Zn (ppm)	38
Rb (ppm)	85
Sr (ppm)	168
Ba (ppm)	26
Fe (ppm)	2093

Table 3S. Porous texture characterization of the solid fraction.

	400CP	400MIP	800CP	800MIP
S_{BET} (m_2/g)	-	38	13	109
V_P (cm_3/g)	-	0.03	0.02	0.10
$V_{mic\text{-}N2}$ (cm^3/g)	-	0.01	0.006	0.04
$V_{mic\text{-}CO2}$ (cm^3/g)	-	0.11	-	0.06
ρ_{HE}	1.51	1.85	1.57	1.92