

CATALYTIC BIO-SLURRY DEGRADATION TO BIO-HYDROGEN AND
HYDROCARBON FUELS USING AND ELECTROLYTIC BIOMASS SOLAR
CELL – MARJAN ABDALLAH KHAMIS

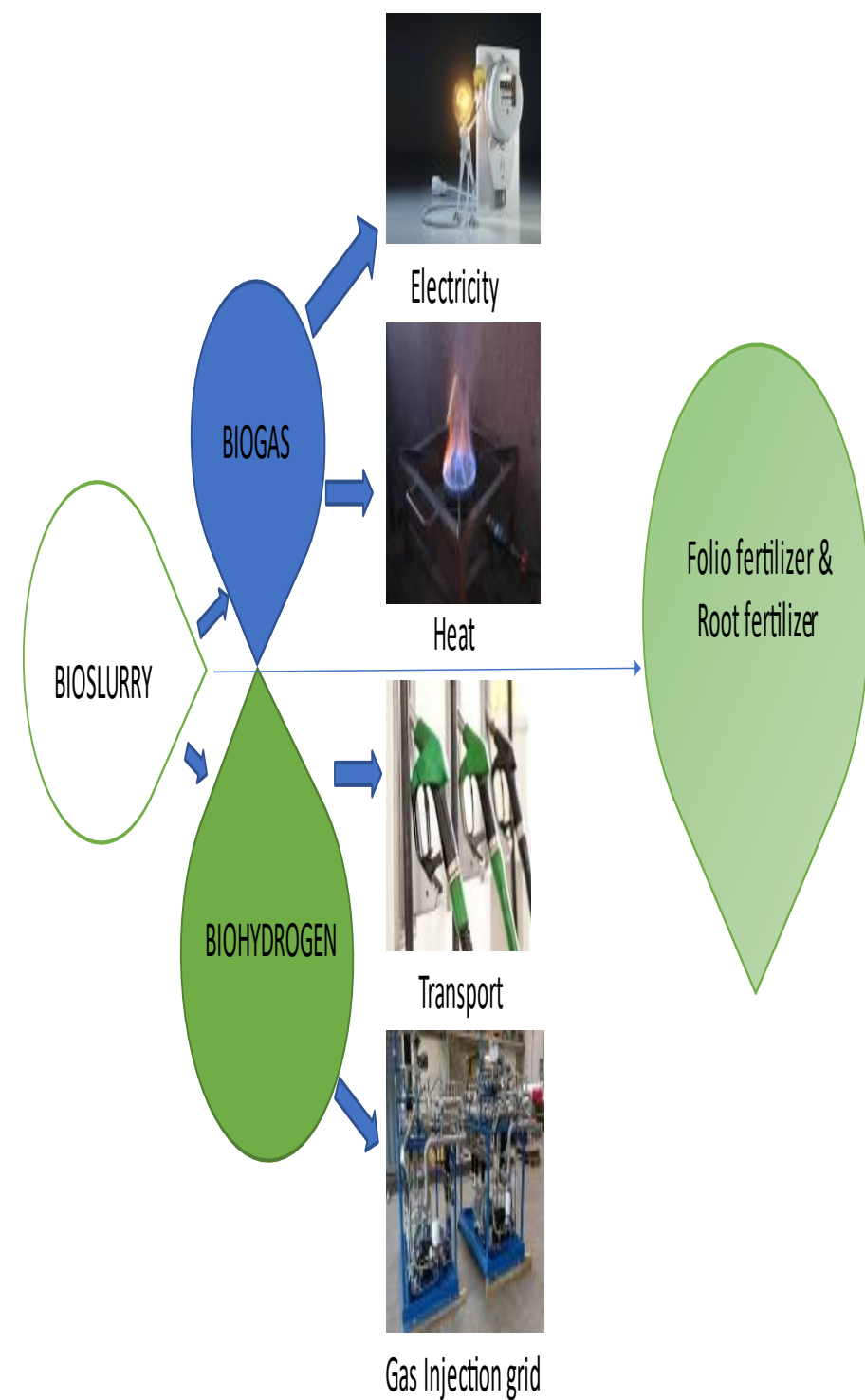
ABSTRACT

The disposal of bio-slurry disposal in areas that do not have farmyards, where they can be applied for use as organic manure is a conundrum. Also, there is a developing need to opt for more environmentally friendly processes to generate more efficient and cleaner bio-fuels. This study purposed to Catalyze bio-slurry degradation to bio-hydrogen and hydrocarbon fuels using an electrolytic solar cell, a 40Watt solar power panel. Design and fabrication of a modified E.B.S.C of capacity [Electrode sections; Height:13cm, diameter:4.91cm, length: 36.10cm, gas collection chamber diameter: 5.30cm, collection tube: 1.27cm] was done. A pre-experimental set-up with a 9,000mL capacity of bio-slurry and a solar energy system of 40W (current of Pmax; vmp of 1.1) was used in order to electrolyze bioslurry. Analysis of the slurry's bio-characteristics revealed presence of bacterial colonies, a total Solid concentration of 14.8mg/L (TSS=13mg/L & TDS =1.8mg/L ±0.01), pH of 8.04 (±0.01). Geo-catalyst and synthesized iron oxide catalyst were used to lower kinetic energy barrier and enhance the rate of degradation and gas volume production. The gas evolved in the set-up containing *ebara* electrocatalyst depicted the highest volume followed by the set-up with the iron electrocatalyst with a variation of 50mL difference for some of the days while similar gas collection levels for other days. The control experiment depicted that the two catalyst had an impact in the degradation of the bio-slurry as time went by.

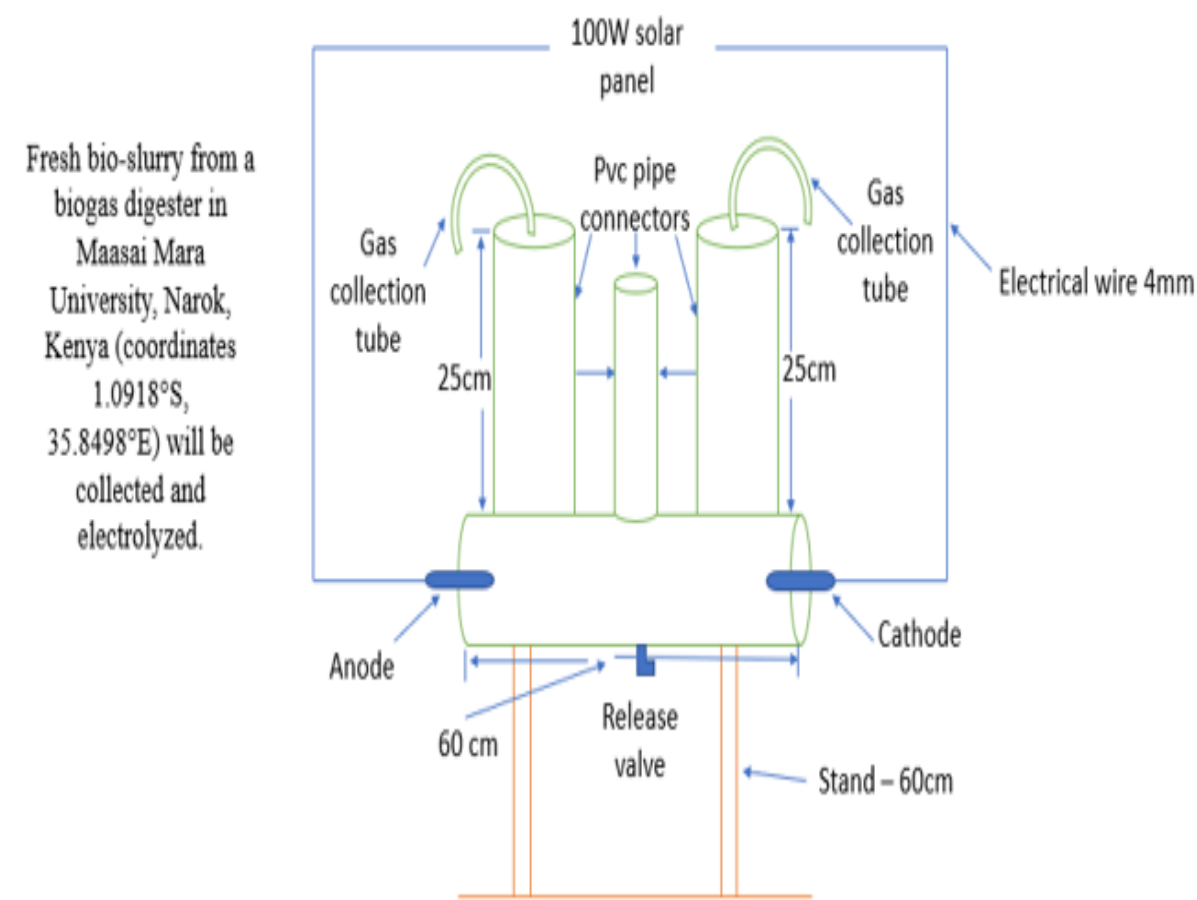
Keywords: Bioslurry, electrolytic biomass degradation, electrolytic biomass solar cell, electrocatalysts.

Theory of change

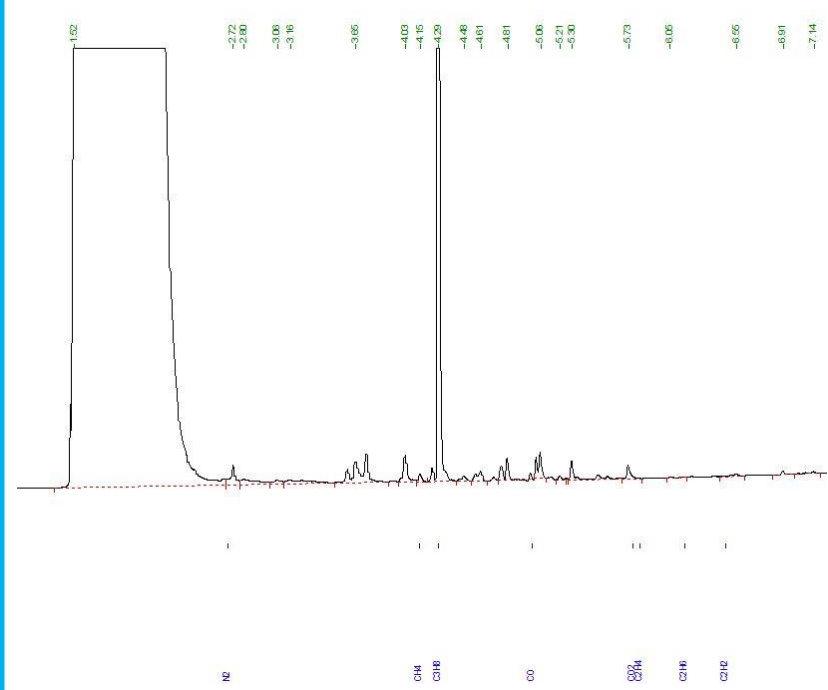
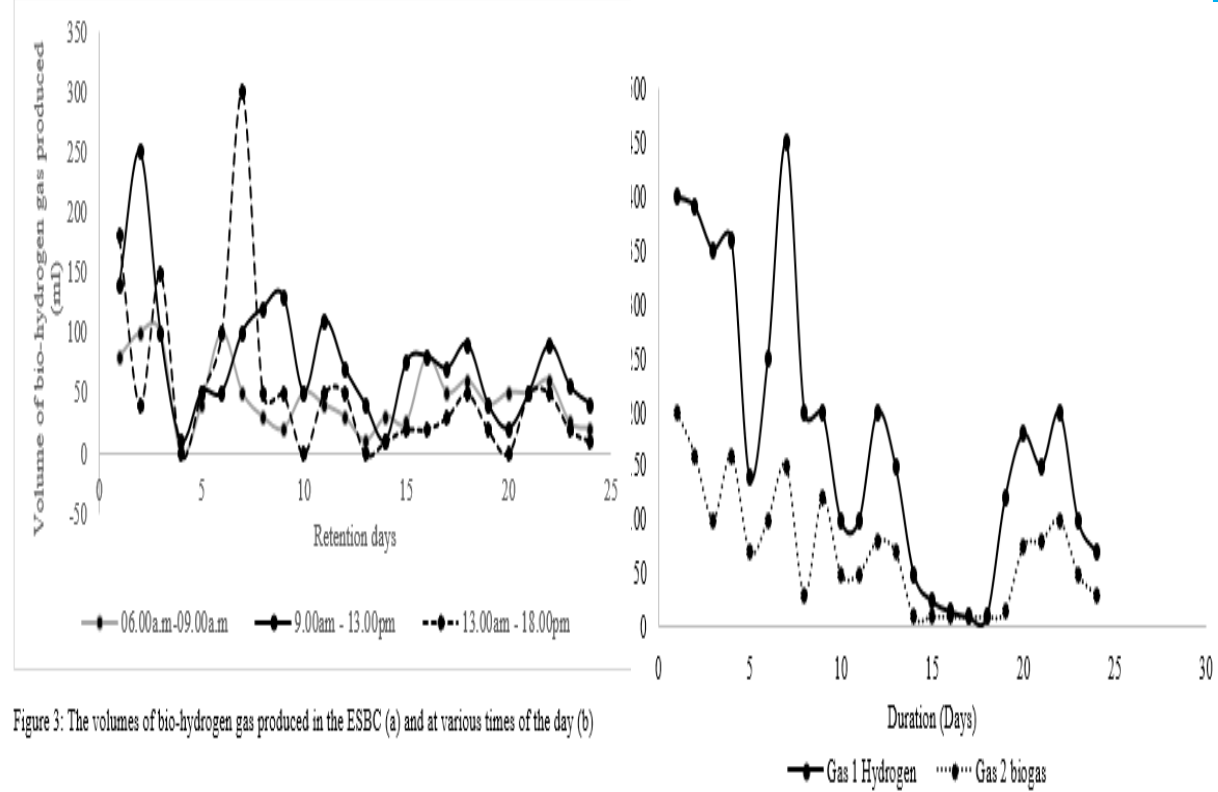
This research was envisioned to have the following output.



Experimental set-up



Integration of Solar energy in waste biomass conversions – Design and installation of the Electrolytic Biomass Cell



CSI INTERNATIONAL LTD									
GC Report									
Peak #	Component Name	Time [min]	Area [uV*sec]	Height [uV]	Height [uV]	Area [%]	Conc ppm	Adjusted Conc ppm	
2	N2	2.720	25731.63	9905.46	9905.46	2.53	0.0000	0.0000	
8	CH4	4.148	6964.65	3741.21	3741.21	0.69	0.0000	0.0000	
9	C3H8	4.288	935030.16	794262.16	794262.16	92.06	0.0000	0.0000	
13	CO	5.061	29493.56	13280.93	13280.93	2.90	0.0000	0.0000	
16	CO2	5.730	13940.94	7005.17	7005.17	1.37	0.0000	0.0000	
5	C2H4	5.821	0.00	0.00	0.00	0.00	0.0000	0.0000	
17	C2H6	6.047	866.47	305.97	305.97	0.09	0.0000	0.0000	
18	C2H2	6.554	3599.54	841.61	841.61	0.35	0.0000	0.0000	
11	Carbaryl	11.549	0.00	0.00	0.00	0.00	0.0000	0.0000	
-	Emamectin	14.859	0.00	0.00	0.00	0.00	0.0000	0.0000	
			1015626.96	829342.51	829342.51	100.00	0.0000	0.0000	