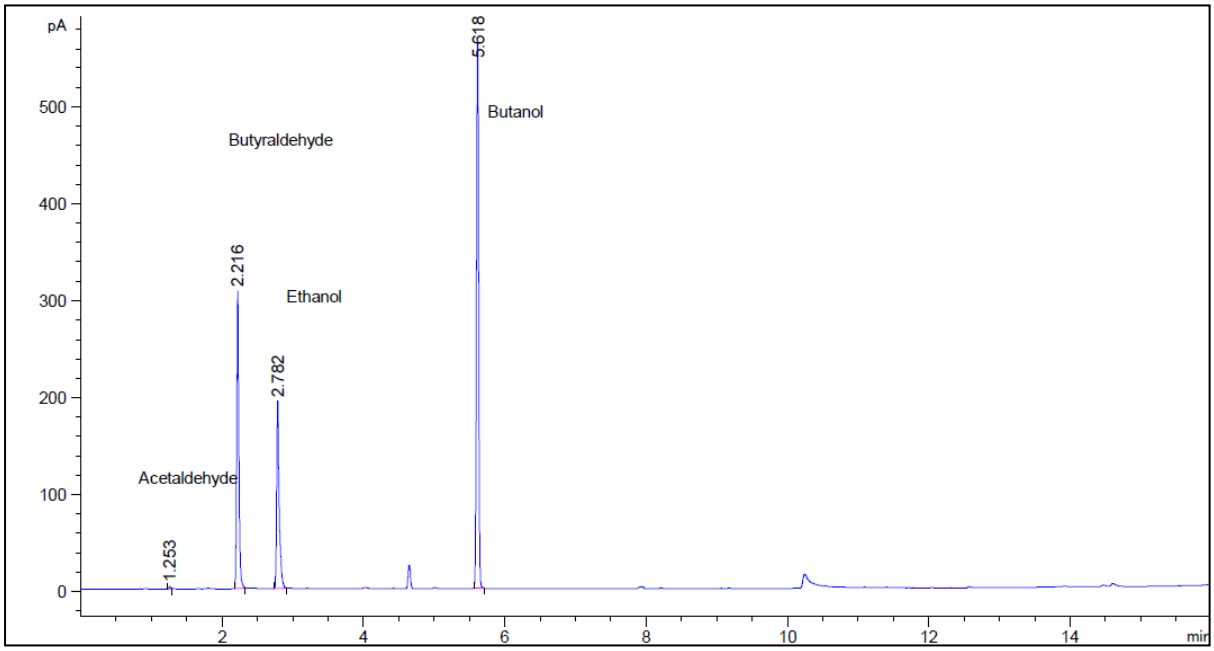
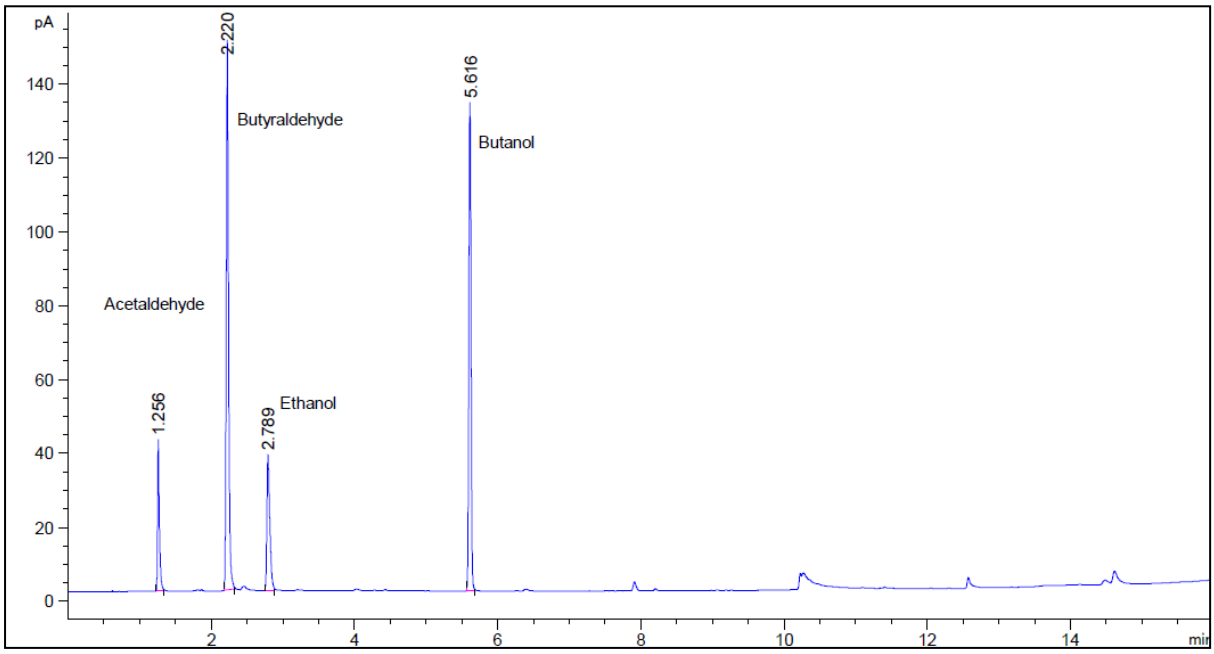
Fig. 1. Standard run on GC with 20 mM of each acetaldehyde, butyraldehyde, ethanol and butanol showing retention time of 1.253, 2.216, 2.782 and 5.618 min, respectively.



Peak #	RetTime [min]	Type	Width [min]	Area [pA*s]	Height [pA]	Area %
1	1.253	BB	0.0234	3.77021	2.38594	0.16128
2	2.216	BB	0.0330	655.65540	306.03186	28.04745
3	2.782	BB	0.0362	481.87115	192.77574	20.61336
4	5.618	BB	0.0339	1196.36780	560.50897	51.17791

Fig. 2. The reaction for optimization of ratio of butyraldehyde to ethanol for the production of butanol with ratio 2:1.



Peak #	RetTime [min]	Type	Width [min]	Area [pA*s]	Height [pA]	Area %
1	1.256	BB	0.0256	72.24192	40.82387	9.20798
2	2.220	BB	0.0340	331.63852	148.70483	42.27076
3	2.789	BB	0.0420	103.62764	36.59353	13.20841
4	5.616	BB	0.0334	277.04971	132.23482	35.31285