

Separations of Light Hydrocarbons

General separation technologies, Inc.

Zhenghua Ji

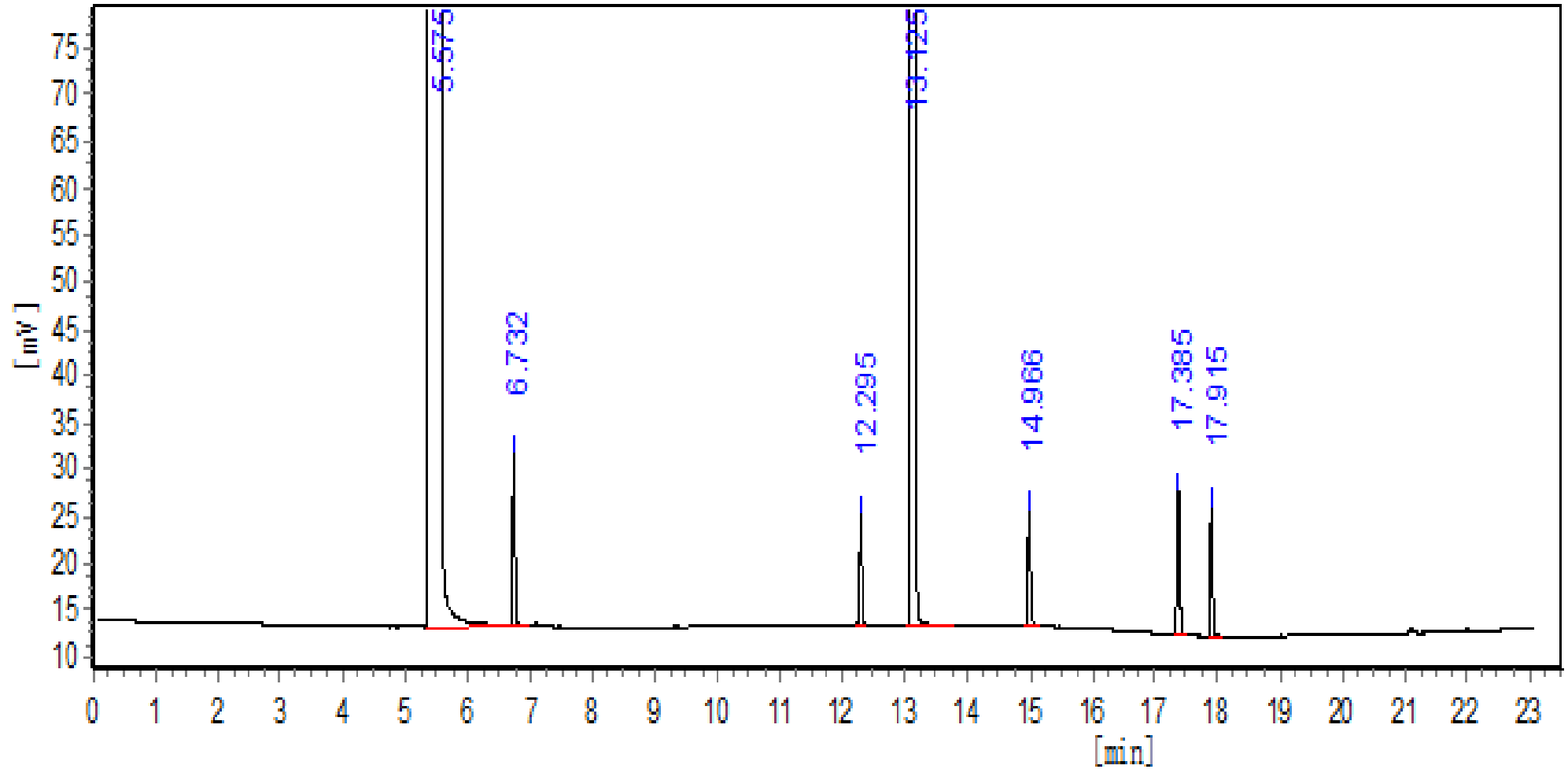
Zoe Wang

Light Hydrocarbon Separations on 100m GsBP-1 Column

Instrumentation Conditions

- GC: Agilent 7890 w/ FID
- Cat no: 0125-A010 ,100m x 0.25mm x 1.0um
- Oven: 40°C 8min 5 °C/min 150 °C 10min
- Carrier: Hydrogen, column flow 1.3ml/min
- Inlet: Split, 275 °C, split flow 80ml/min
- Detector: FID 325 °C

Chromatogram 1



Peak Identifications and Resolutions

Peak #	Component	Concentration(%)	MeasRetTime	Resolution
1	Methanol	Solvent	5.575	
2	Ethanol*	N/A	6.732	
3	Hexane (C ₆ H ₁₄)	100ppm	12.295	
4	1-Butanol	200ppm	13.125	
5	Isooctane (I-C ₈ H ₂₀)	100ppm	14.966	
6	Heptane(C ₇ H ₁₆)	100ppm	17.385	
7	Octane (C ₈ H ₂₀)	100ppm	17.915	

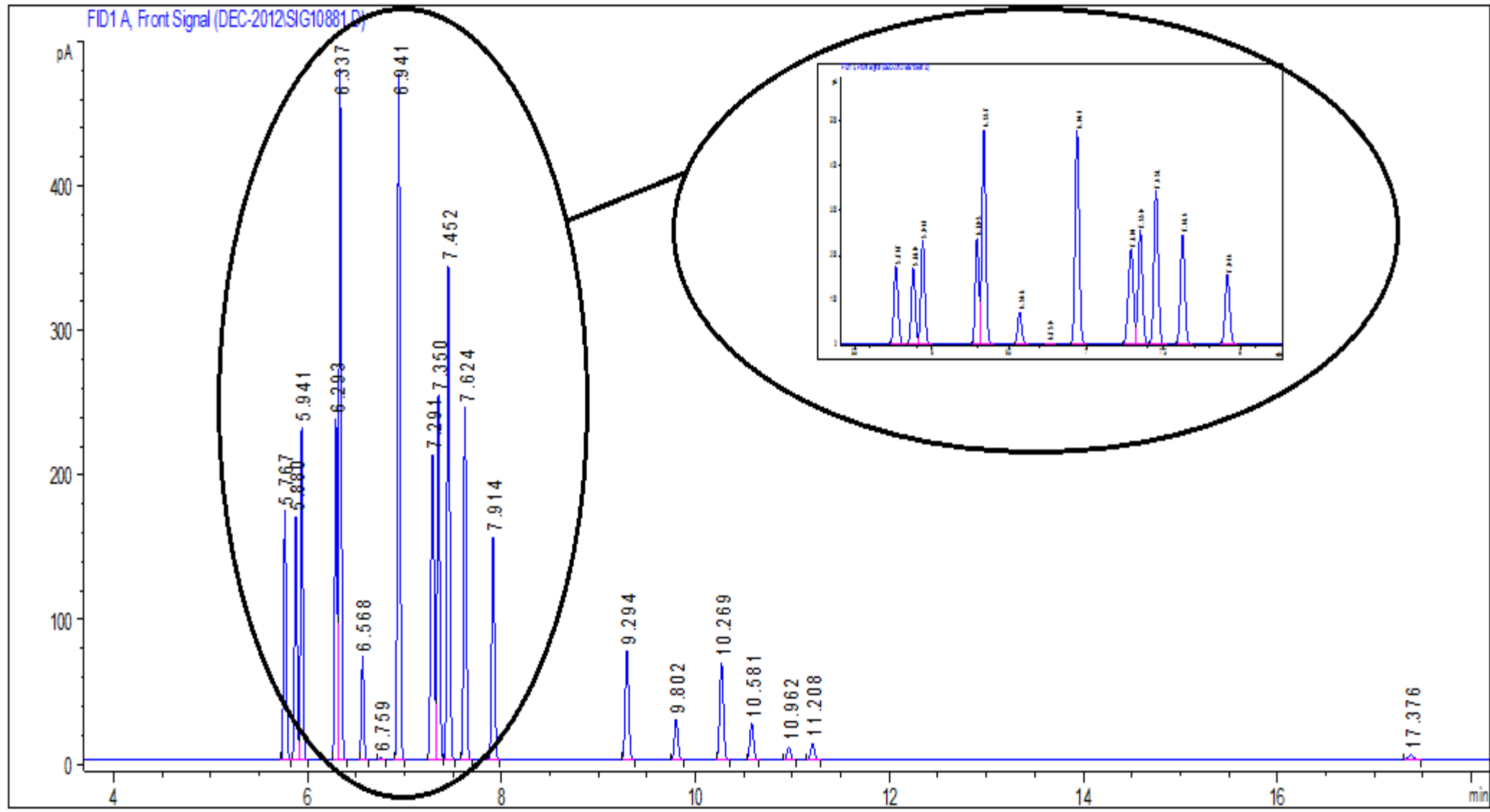
* Impurities in methanol.

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Chromatogram 2



Peak Identifications and Resolutions

Peak #	Component	Concentration(%)	MeasRetTime	Resolution
1	Methane	3.043	5.77	
2	Ethylene/acetylene	2.014/0.997	5.88	3.85
3	Ethane	3.997	5.94	2.24
4	Propylene	2.998	6.29	
5	Propane	5.997	6.34	1.65
6	Propadiene	0.991	6.57	
7	Cyclopropane	0.03	6.76	
8	Isobutane	5.008	6.94	
9	1-Butene	2.001	7.29	
10	1,3-Butadiene	2.986	7.35	1.77
11	N-Butane/Isobutene	4.016/1.004	7.45	3.34
12	Trans-2-butene	3.012	7.62	5.54

Peak Identifications and Resolutions (continued)

Peak #	Component	Concentration(%)	MeasRetTime	Resolution
13	Cis-2-butene	2.006	7.91	
14	Isopentane	1.002	9.29	
15	1-Pentene	0.398	9.80	
16	N-Pentane	1.002	10.27	
17	Trans-2-Pentene	0.404	10.58	
18	Cis-2-Pentene	0.152	10.96	
19	2-Methyl-2-Butene	0.199	11.21	5.34
20	N-Hexane	0.101	17.38	

Conclusion

- *Light hydrocarbons C1-C8 can be separated on 100m columns.*
- *Some isomers could not be separated on polysiloxane phase such as GsBP-1. To improve the resolution, decreasing testing temperature to 35 °C is recommended for 100m GsBP-1 column.*