

## 4.13 Analysis of Fragrant Material (1) - GCMS

### •Explanation

Many fragrant components are contained in food products. These components are compounds of alcohols, esters, aldehydes, ketones, terpenes and others. The amount and mixture ratio of these components determine the aroma, and any aroma can be artificially synthesized by mixing these components. Here, some 100-aroma components were mixed together and analyzed by GCMS.

### •Analytical Conditions

Instrument : GCMS-QP5000  
Column : DB-WAX 0.25mm × 60m df = 0.25μm  
Col.Temp. : 70°C(5min)-210°C(3/min)(30/min)  
Inj.Temp. : 250°C  
Int.Temp. : 230°C  
Carrier Gas : He(180kPa)  
Injection : Split(100:1)

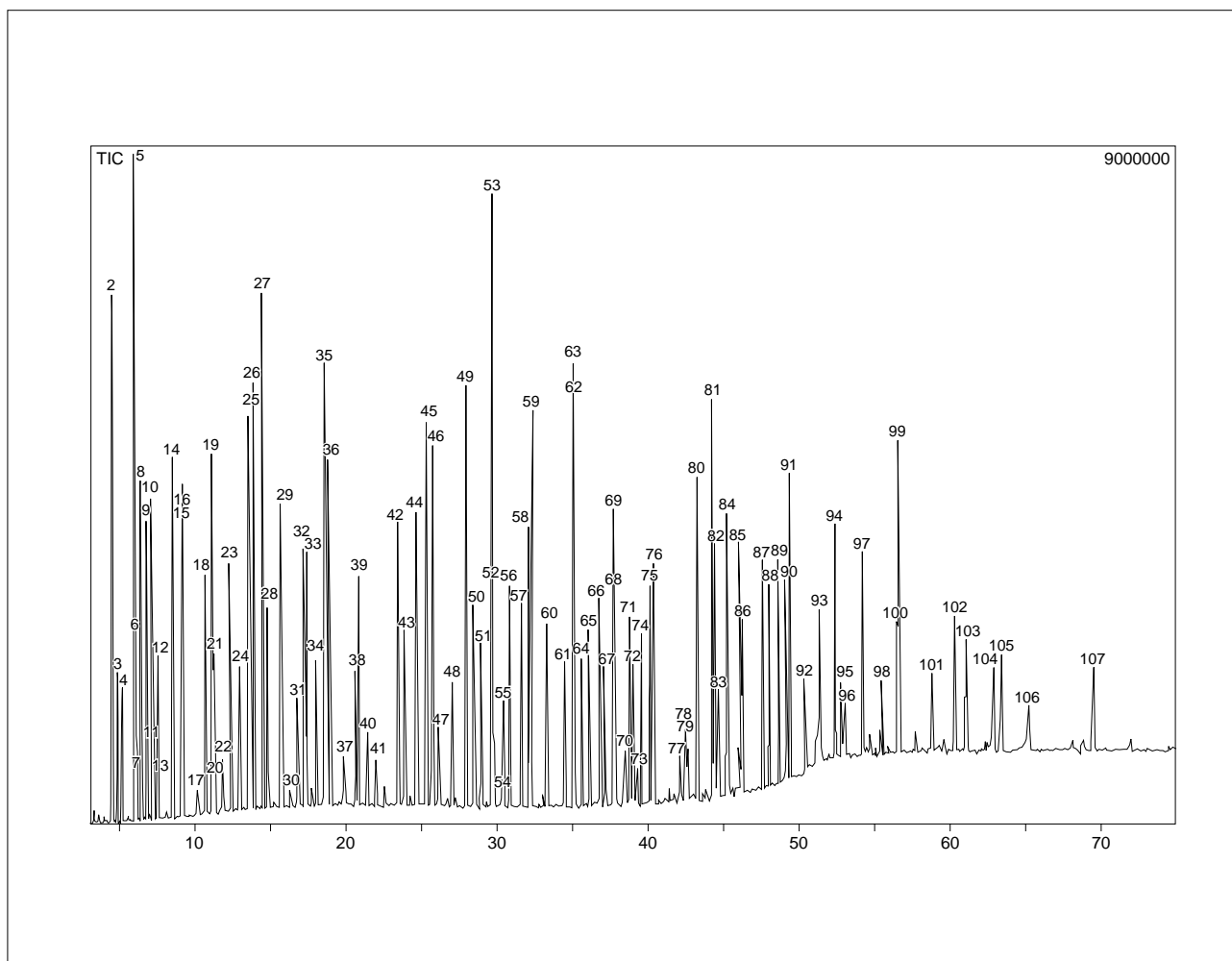


Fig. 4.13.1 TIC chromatogram of fragrant components



### 4.13 Analysis of Fragrant Material (2) - GCMS

	Compound	Alcohol	Ester	Aldehyde	Ketone	Terepene	Others
1	Ethyl acetate		O				
2	Diethyl acetal			O			
3	Ethyl alcohol	O					
4	Ethyl propionate		O				
5	i – Butyl acetate		O				
6	Chloroform						O
7							
8	Ethyl n-butyrate		O				
9	Ethyl 2-methyl butyrate		O				
10	Ethyl i-valerate		O				
11	n-Butyl acetate		O				
12	n-Hexanal			O			
13	i-Butyl alcohol	O					
14	n-Amyl acetate		O				
15	n-Butyl alcohol	O					
16	Methyl i-amyl ketone				O		
17							
18	n-Amyl propionate		O				
19	Limonene					O	
20	2-Methyl butyl alcohol	O					
21	n-Amyl furmate		O				
22	c-2-Hexenal			O			
23	Ethyl caproate		O				
24	n-Amyl alcohol	O					
25	i-Amyl n-butyrate		O				
26	n-Hexyl acetate		O				
27	Methyl n-hexyl ketone				O		
28	i-Amyl i-valerate		O				
29							
30							
31	Ethyl lactate		O				
32	n-Hexanol	O					
33	Ethyl n-hexyl ketone				O		
34	Allyl caproate		O				
35							
36	Methyl n-heptyl ketone				O		
37	t-3-Hexenol	O					
38							
39	Ethyl caprylate		O				
40	Acetic acid						O
41	Furfural			O			
42	Methyl n-octyl ketone				O		
43	Tetrahydro furfuryl alcohol	O					
44	Benzaldehyde			O			
45	Ethyl nonanoate		O				
46	Linalool					O	
47							
48	Diethyl malonate		O				
49	Methyl n-nonyl ketone				O		
50	Ethyl levulinate		O				
51	Methyl benzoate		O				
52	Ethyl caprate		O				
53	l-Menthol					O	
54							

## 4.13 Analysis of Fragrant Material (3) - GCMS

	Compound	Alcohol	Ester	Aldehyde	Ketone	Terepene	Others
55	Furfuryl alcohol	O					
56	Ethyl benzoate		O				
57	Phenyl diethyl acetate		O				
58							
59	Methyl n-decyl ketone				O		
60	Benzyl acetate		O				
61	Methyl phenyl acetate		O				
62	Dimethyl benzyl carbinyl acetate		O				
63	Allyl caprate		O				
64	Ethyl phenyl acetate		O				
65	Allyl $\beta$ -cyclohexyl propionate		O				
66	Phenethyl acetate		O				
67	Anethol					O	
68	Caproic acid						O
69	Ethyl laurate		O				
70	t-2-Decenal			O			
71	Benzyl n-butyrate		O				
72	Benzyl alcohol	O					
73	Phenethyl propionate		O				
74	i-Butyl phenyl acetate		O				
75	Dimethyl benzyl carbinylbutyrate		O				
76	Phenyl ethyl alcohol	O					
77							
78							
79	Phenyl ethyl propionate		O				
80	Phenethyl i-valerate		O				
81	Methyl n-tridecyl ketone				O		
82	Anisaldehyde			O			
83	$\gamma$ -Nonalactone						O
84	Ethyl myristate		O				
85	Triacetine						O
86	Methyl cinnamate		O				
87	Benzylidene acetone				O		
88	Ethyl cinnamate		O				
89	$\gamma$ -Decalactone						O
90	Eugenol					O	
91	Phenethyl caproate		O				
92	$\delta$ -Decalactone						O
93	Heliotropine						O
94	$\gamma$ -Undecalactone						O
95	Anisalcohol	O					
96	Cinnamy alcohol	O					
97	Diethyl sebacate		O				
98							
99	$\gamma$ -Dodecalactone						
100	Phenethyl octanoate		O				
101	$\delta$ -Dodecalactone						O
102	TEC						O
103	Benzophenone				O		
104	Ethyl vanillin						O
105							
106	vanilline						O
107	Benzyl benzoate		O				

Chart 4.13.2 Component names 2