Electronic Supplementary Material (ESI) for RSC Advances.

Table S1 Surface area, pore volume and average pore diameter of used ZnZSM-5-Al_2O_3, IO-PtZnZSM-5-Al_2O_3 and IM-Pt/ZnZSM-5-Al_2O_3 hierarchical composite catalysts.

Catalyst[a]	BET SA[b] (m^2/g)	Total PV[c] (cm^3/g)	Ave. PD[d] (nm)	BJH SA[b] (m^2/g)	BJH PV[c] (cm^3/g)	BJH PD[d] (nm)
Zn(13)ZA	256	0.63	9.8	271	0.63	11
IO1-PtZn(13)ZA	259	0.63	9.7	258	0.62	11
IO2-PtZn(15)ZA	260	0.66	10	269	0.66	11
IM1-Pt/Zn(15)ZA	260	0.63	9.7	269	0.63	11
IM2-Pt/Zn(13)ZA	248	0.63	10	271	0.64	11
IO3-PtZn(30)ZA	266	0.64	9.7	278	0.64	11
IM3-Pt/Zn(30)ZA	259	0.62	9.6	268	0.62	11

[a] Abbreviation of the sample name is same as in the footnote of Figure 1. [b] SA: Surface area, [c] PV: Pore volume, [d] PD: Pore diameter

Table S2 Products Yield, iso/n ratio, RON, cetane number, aromatic yield of ZnZSM-5-Al_2O_3, IO-PtZnZSM-5-Al_2O_3 and IM-Pt/ZnZSM-5-Al_2O_3 hierarchical composite catalysts at 450°C

Catalyst[a]	Conv. of MO (%)	iso-/n-(C5-)	C2	C3	C4	RON (C5-C14)	Cetane Number (C15-C18)
Zn(13)ZA	100	1.8	1.3	3.5	5.3	77	75
IO1-PtZn(13)ZA	100	2.0	1.2	3.1	0.77	77	74
IO2-PtZn(15)ZA	100	2.0	1.1	2.8	0.87	83	74
IM1-Pt/Zn(15)ZA	100	1.9	0.14	0.24	0.93	86	75
IM2-Pt/Zn(13)ZA	100	3.0	0.05	0.03	0.32	101	73
IO3-PtZn(30)ZA	100	2.6	0.6	2.0	5.6	90	74
IM3-Pt/Zn(30)ZA	100	1.6	0.25	2.2	3.5	95	75

Selectivity of Product (wt%)						Aromatic yield (wt%)	MB[b] (%)
Gas (C1-C4)	Gasoline (C5-C11)	Kerosene (C12-C14)	Diesel (C15-C18)	C19-	CO, CO_2		
8.4	47	9.8	15	15	4.4（3.5）	13	94
7.6	41	5.8	14	28	3.7(2.9)	9.7	96
11	43	4.4	19	18	4.7(1.8)	13	92
37	27	2.1	20	3.0	9.5(0.78)	12	99
74	10	0.37	1.4	0.49	13(3.1)	8.4	97
26	42	2.6	16	10	3.8(1.4)	16	98
61	15	0.57	9.6	1.4	13(0.86)	11	95

[a]Abbreviation of the sample name is same as in the footnote of Figure 1. [b]The material balance (MB) in Table S2 is given as wt% of the sum of recovered liquid and gas products against feed. Water is included in the liquid product.

Table S3 Products Yield, iso/n ratio, RON, cetane number, aromatic yield of ZnZSM-5-Al_2O_3, IO-PtZnZSM-5-Al_2O_3 and IM-Pt/ZnZSM-5-Al_2O_3 hierarchical composite catalysts at 550°C

Catalyst[a]	Conv. of MO (%)	iso-/n-(C5-)	C2	C3	C4	RON (C5-C14)	Cetane Number (C15-C18)
Zn(13)ZA	100	1.2	1.3	6.5	0.39	83	72
IO1-PtZn(13)ZA	100	2.2	1.3	1.9	7.0	76	72
IO2-PtZn(15)ZA	100	2.0	1.1	2.8	0.87	83	74
IM1-Pt/Zn(15)ZA	100	1.3	0.37	1.0	2.5	86	72
IM2-Pt/Zn(13)ZA	100	1.4	0.43	1.0	2.1	93	74
IO3-PtZn(30)ZA	100	1.4	0.6	1.7	7.7	81	72
IM3-Pt/Zn(30)ZA	100	1.0	0.43	1.3	4.9	85	72

Selectivity of Product (wt.%)						Aromatic yield (wt. %)	MB[b](%)
Gas (C1-C4)	Gasoline (C5-C11)	Kerosene (C12-C14)	Diesel (C15-C18)	C19-	CO, CO_2		
36	45	3.1	7.1	2.0	6.8(4.8)	17	98
33	43	5.7	7.3	3.0	7.1(5.1)	12	90
41	38	4.2	6.0	3.5	6.8(4.3)	16	96
44	36	3.9	6.4	2.2	6.8(3.8)	19	97
60	22	1.7	4.6	2.7	9.4(3.9)	15	94
47	34	3.7	5.9	2.6	6.9(4.2)	17	93
50	33	3.0	5.1	1.7	7.6(3.7)	17	98

[a]Abbreviation of the sample name is same as in the footnote of Figure 1. [b]The material balance (MB) in Table S3 is given as wt% of the sum of recovered liquid

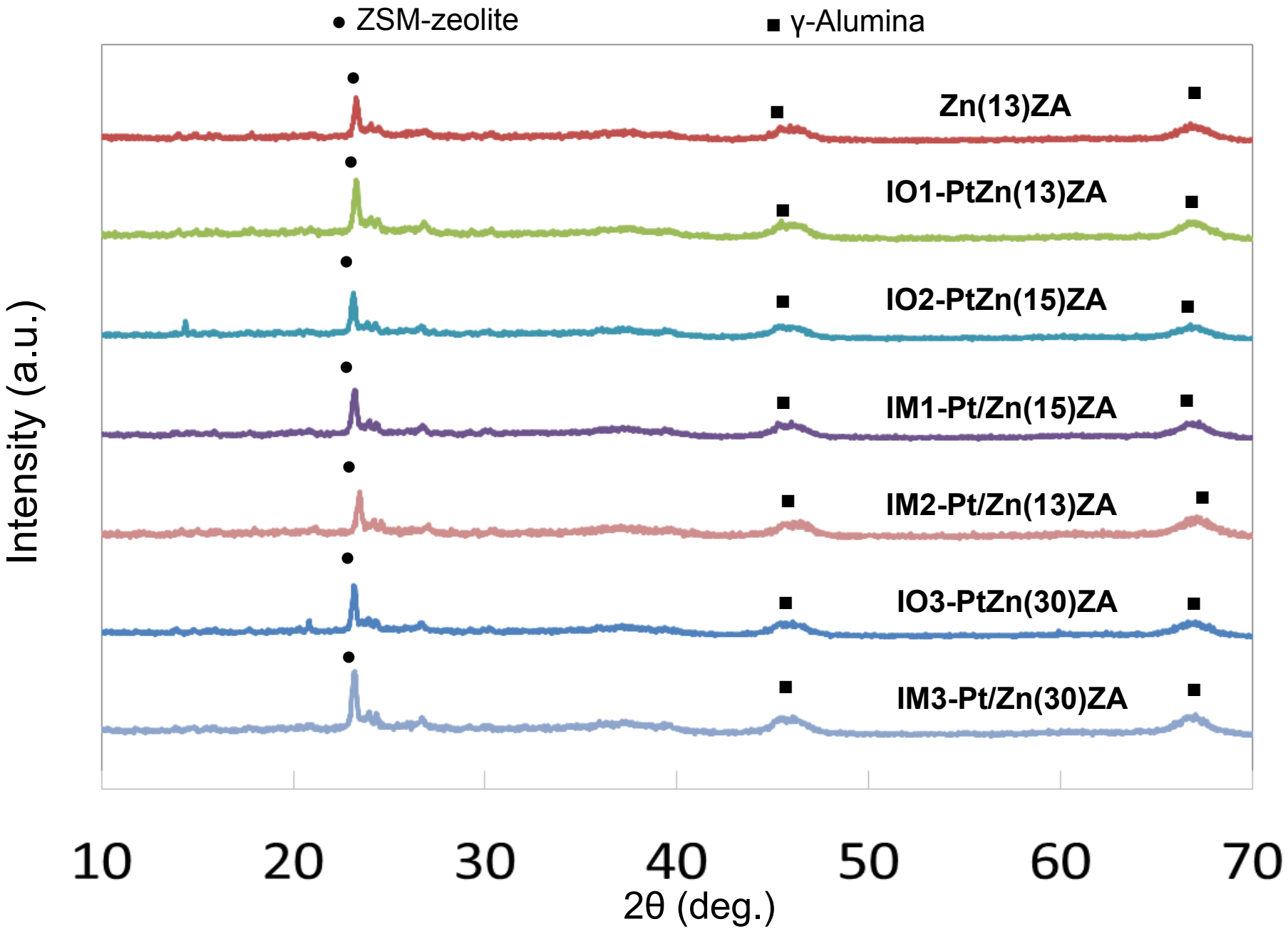

Figure S1 XRD patterns of used Pt/ZnZSM-5-Al_2O_3 and ZnZSM-5-Al_2O_3 hierarchical composite catalysts

Abbreviation of the sample name is same as in the footnote of Figure 1.

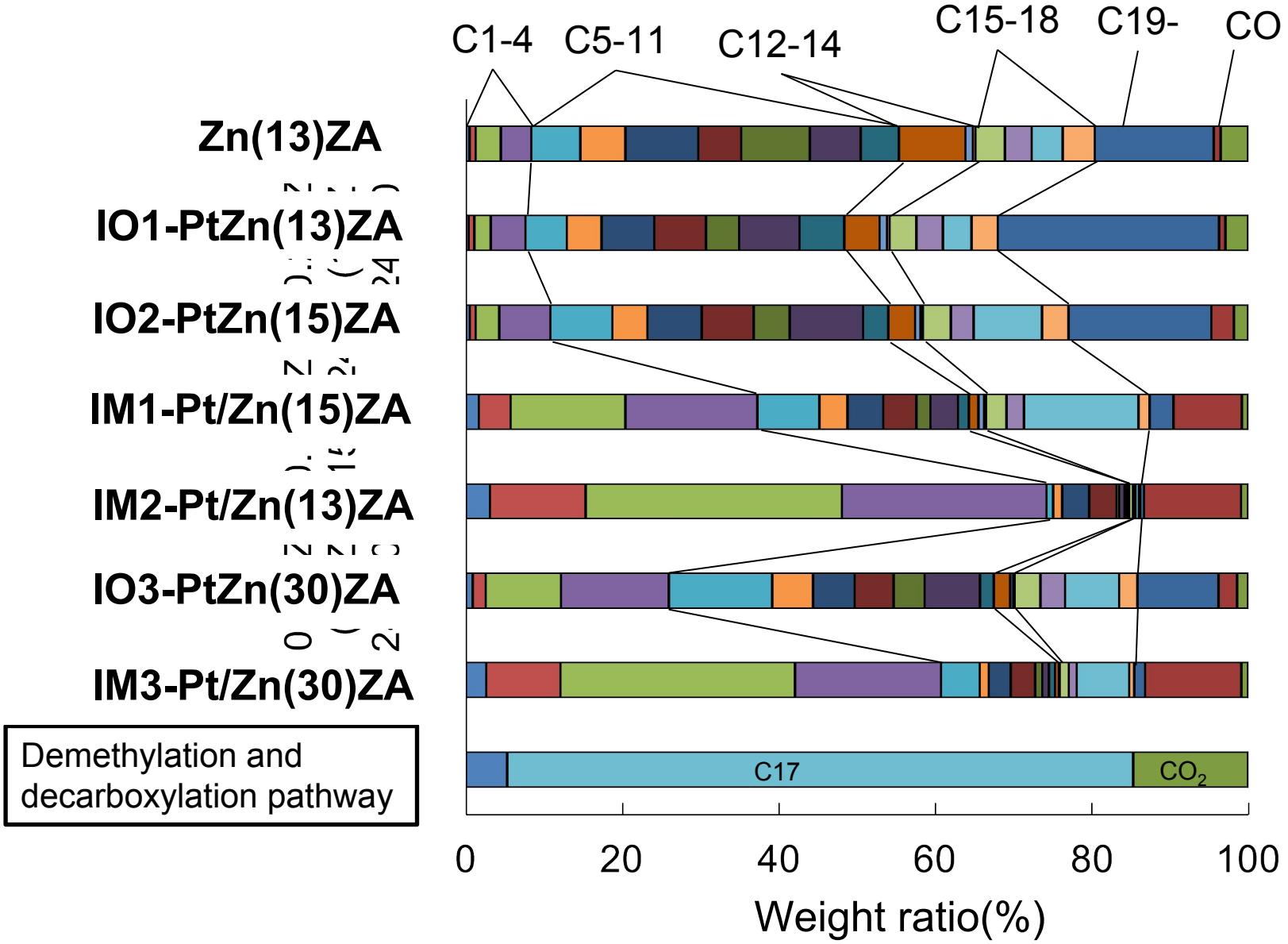

Figure S2 Carbon number distribution of products in dehydrocyclization-cracking of methyl oleate at 450℃.

Abbreviation of the sample name is same as in the footnote of Figure 1.

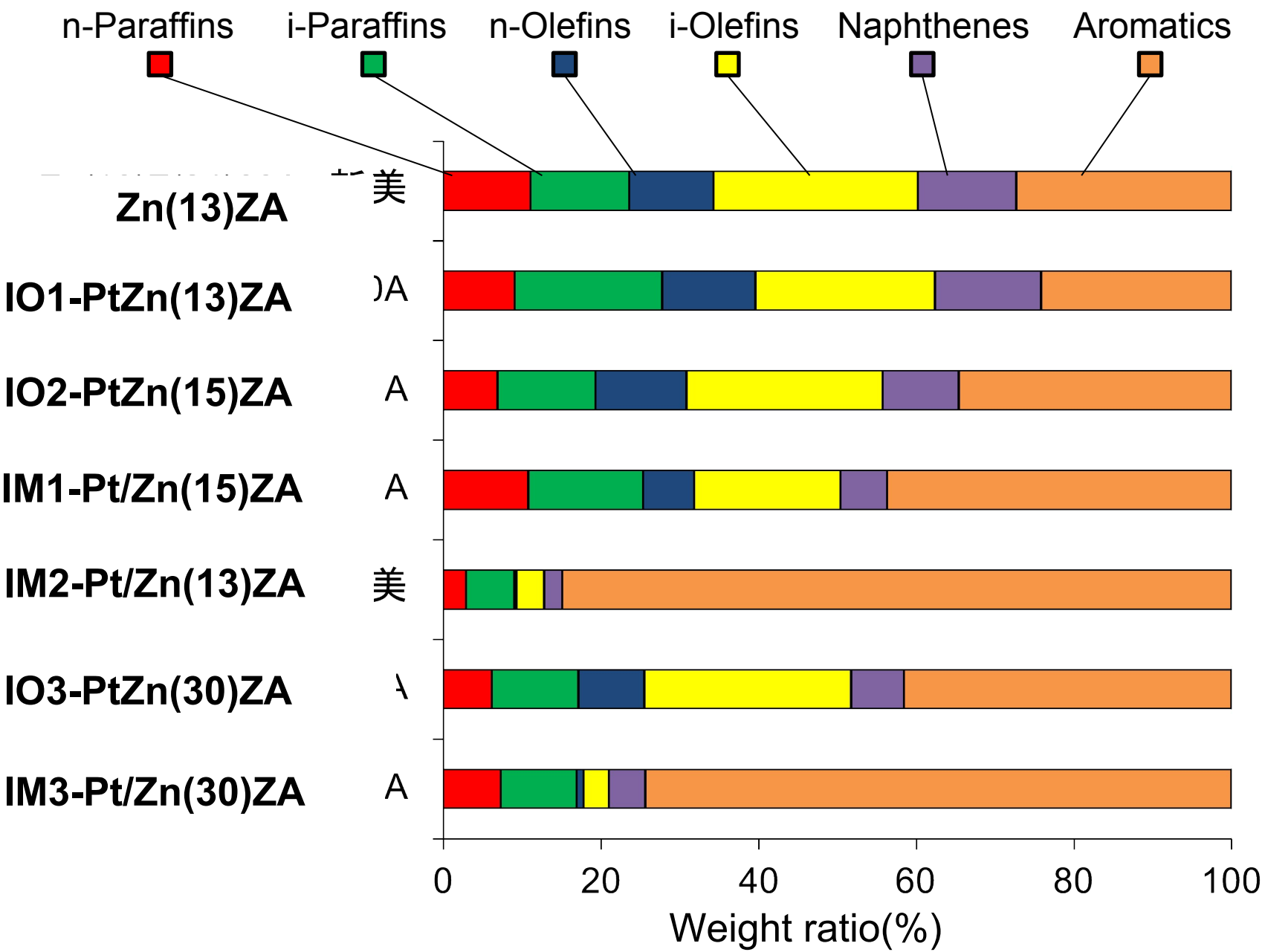

Figure S3 PONA distribution of products in dehydrocyclization-cracking of methyl oleate at 450℃ (C5-C14)

Abbreviation of the sample name is same as in the footnote of Figure 1.

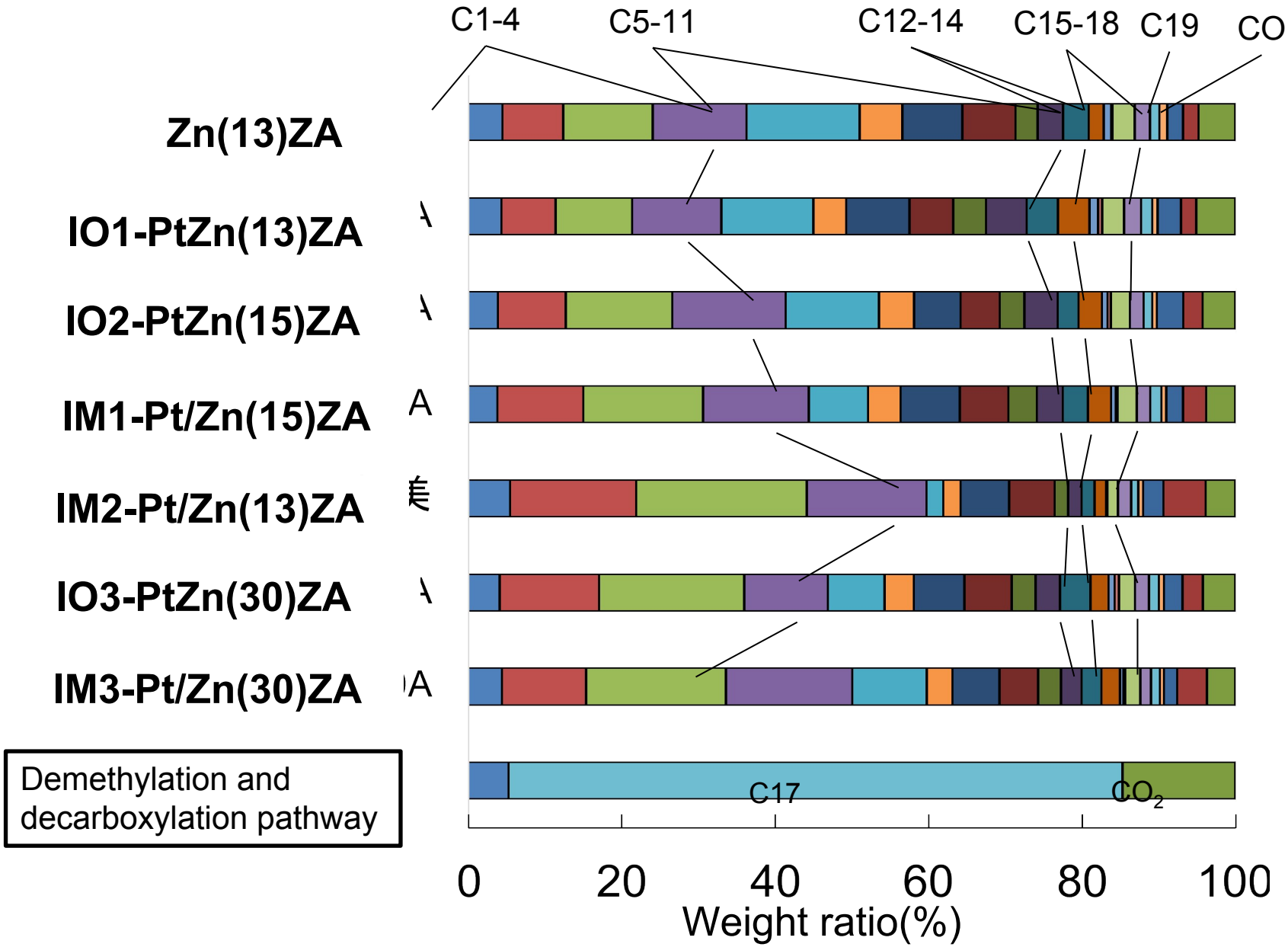

Figure S4 Carbon number distribution of products in dehydrocyclization-cracking at 550℃

Abbreviation of the sample name is same as in the footnote of Figure 1.

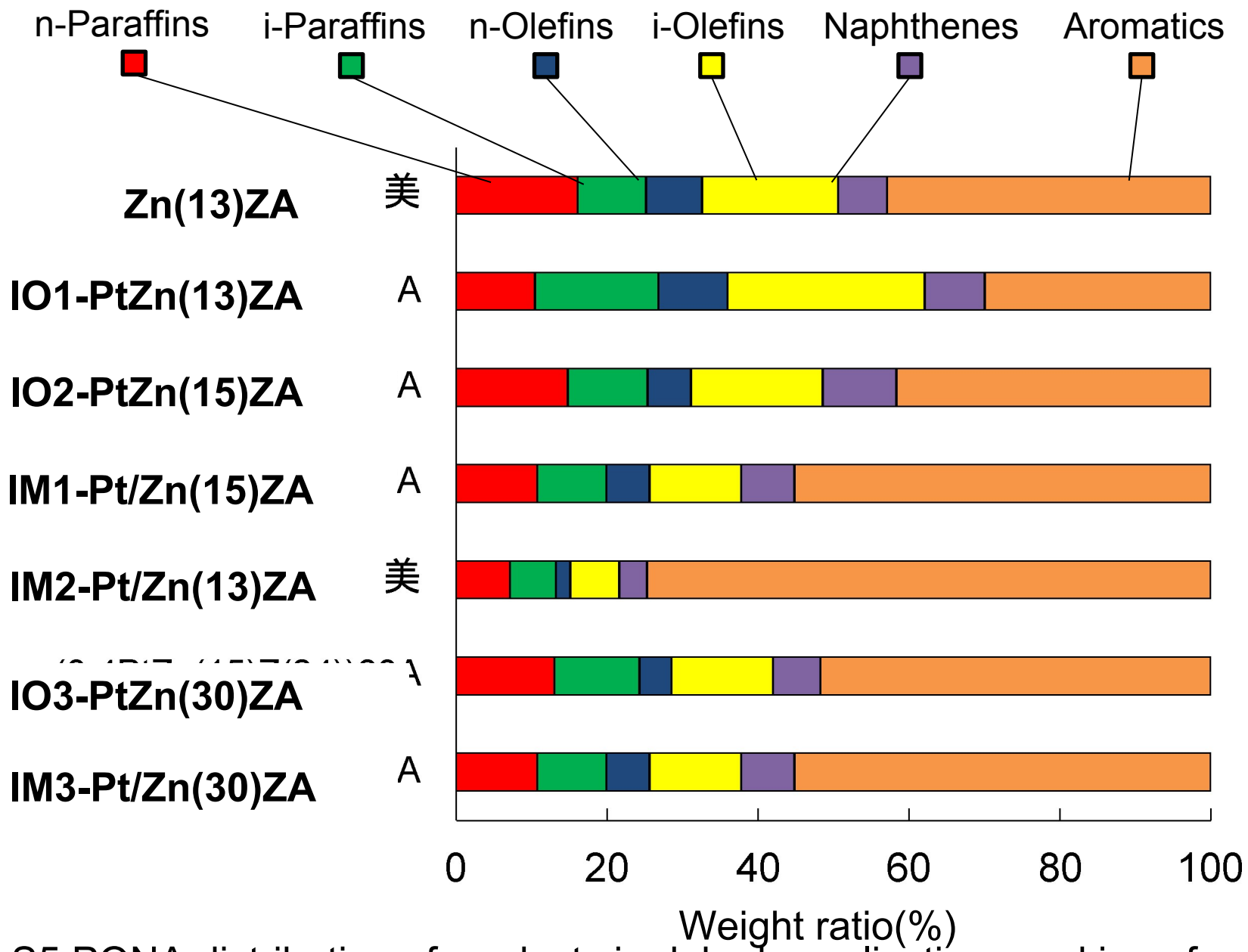

Figure S5 PONA distribution of products in dehydrocyclization-cracking of methyl oleate at 550℃ (C5-C14)

Abbreviation of the sample name is same as in the footnote of Figure 1.