Electronic Supplementary Material (ESI) for Catalysis Science & Technology.

Supplementary Information

LDPE cracking over mono and divalent metal doped Beta zeolites

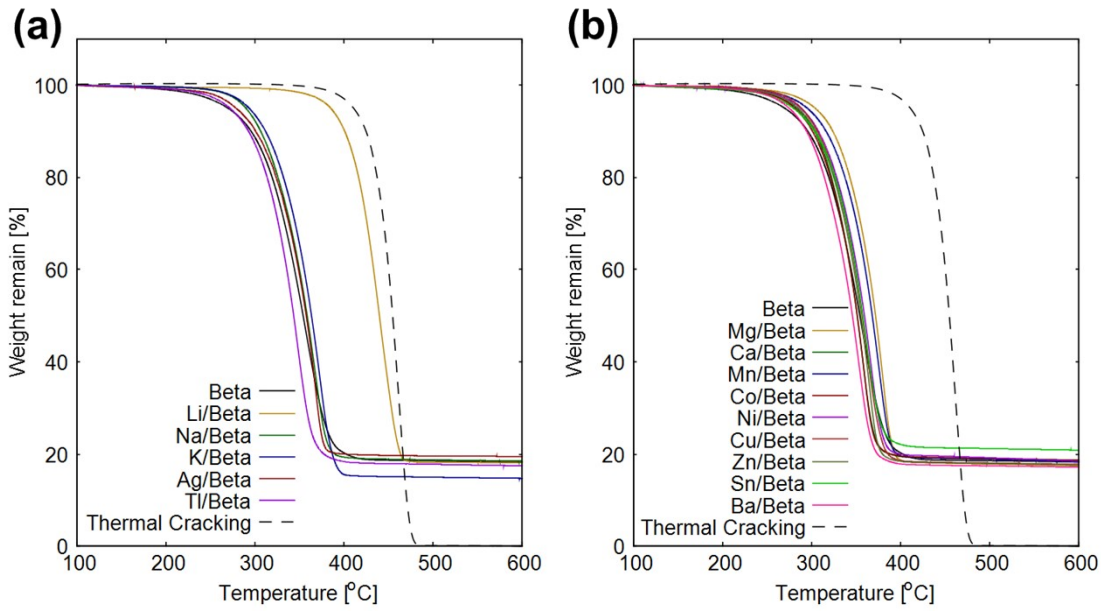
Shinya Kokuryo, *[a] Kazuya Tamura, [a] Koji Miyake, *[a] Yoshiaki Uchida, [a] Atsushi Mizusawa, [b] Tadashi Kubo, [b] and Norikazu Nishiyama [a]

Division of Chemical Engineering, Graduate School of Engineering Science, Osaka University, 1-3 Machikaneyama, Toyonaka, Osaka 560-8531, Japan.

[b.] *AC Biode Co., Ltd. 498-6 Iwakura Hanazono, Sakyo, Kyoto, 606-0024, Japan.*

E-mail: skokuryo@cheng.es.osaka-u.ac.jp, kojimiyake@cheng.es.osaka-u.ac.jp

Fig. S1 TG curves obtained in the catalytic cracking of LDPE with (a) mono and (b) divalent metals doped Beta.



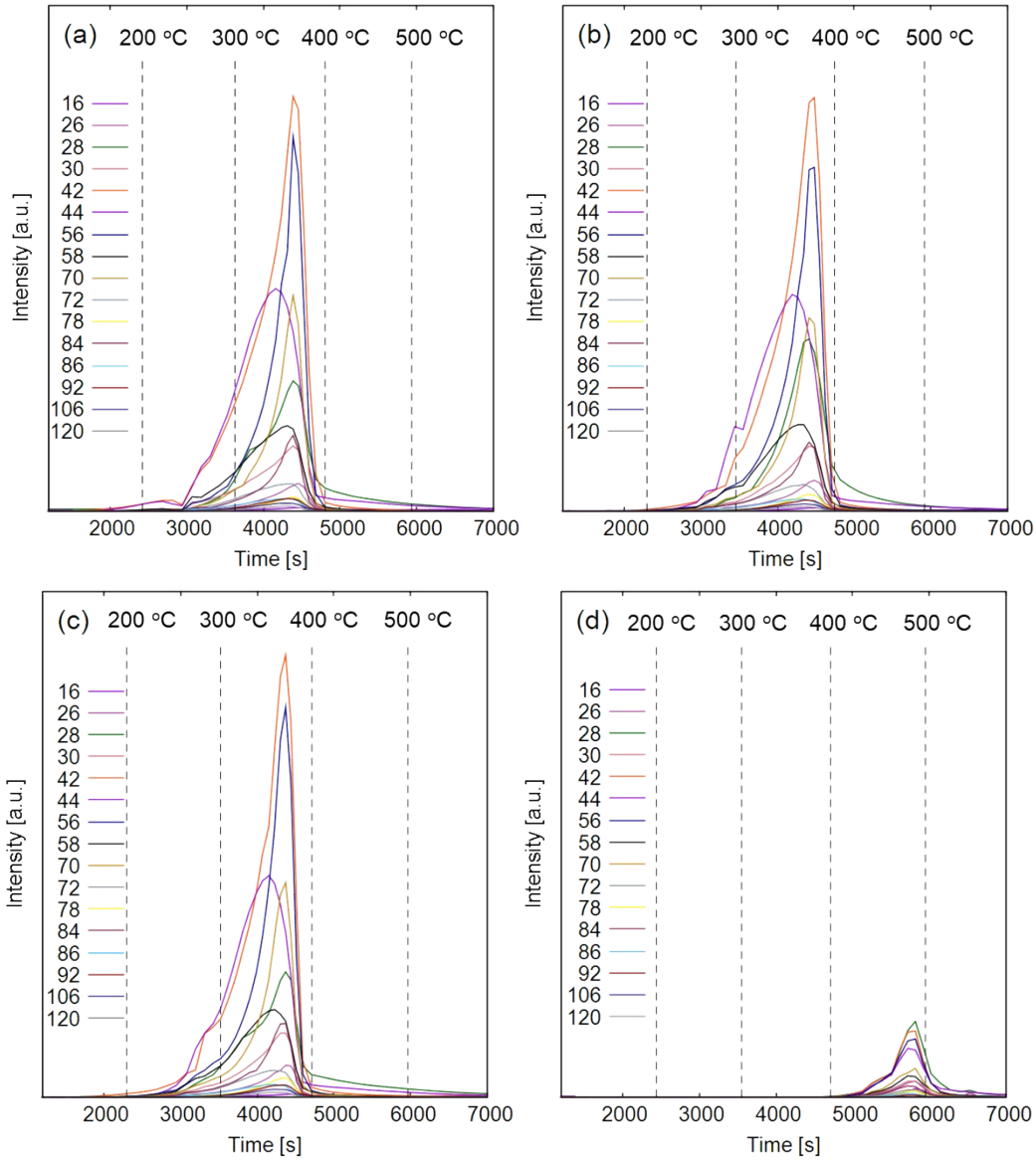


Fig. S2 Mass spectra obtained for (a) pristine Beta, (b) Tl-ion/Beta(1), (c) Ba-ion/Beta(1), and (d) catalyst-free after LDPE cracking

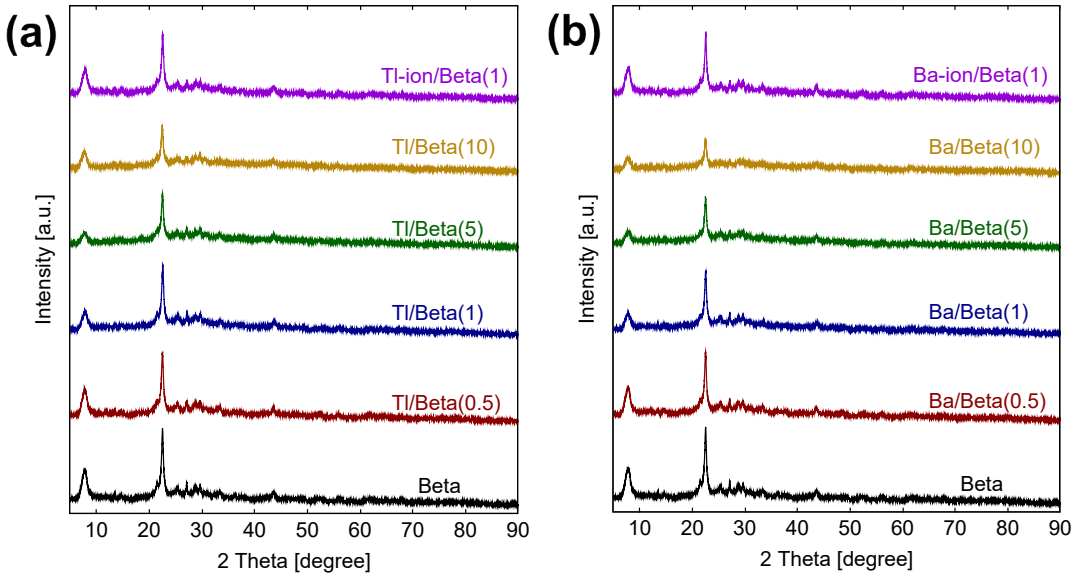


Fig. S3 XRD patterns of (a) Tl-doped Beta and (b) Ba-doped Beta.

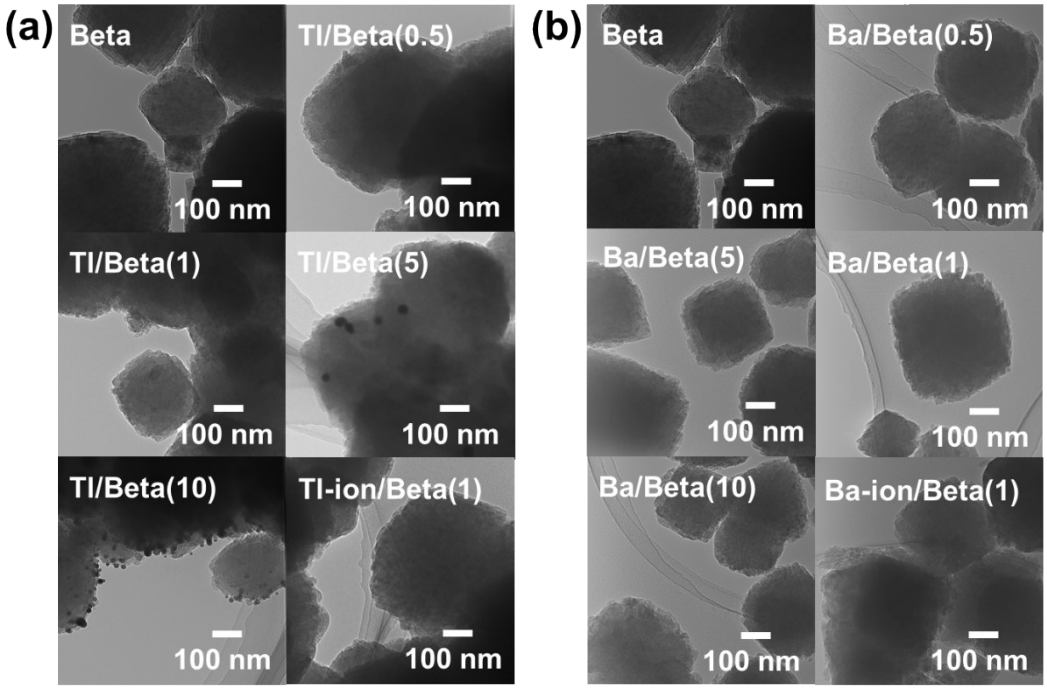


Fig. S4 TEM images of (a) Tl-doped Beta and (b) Ba-doped Beta.

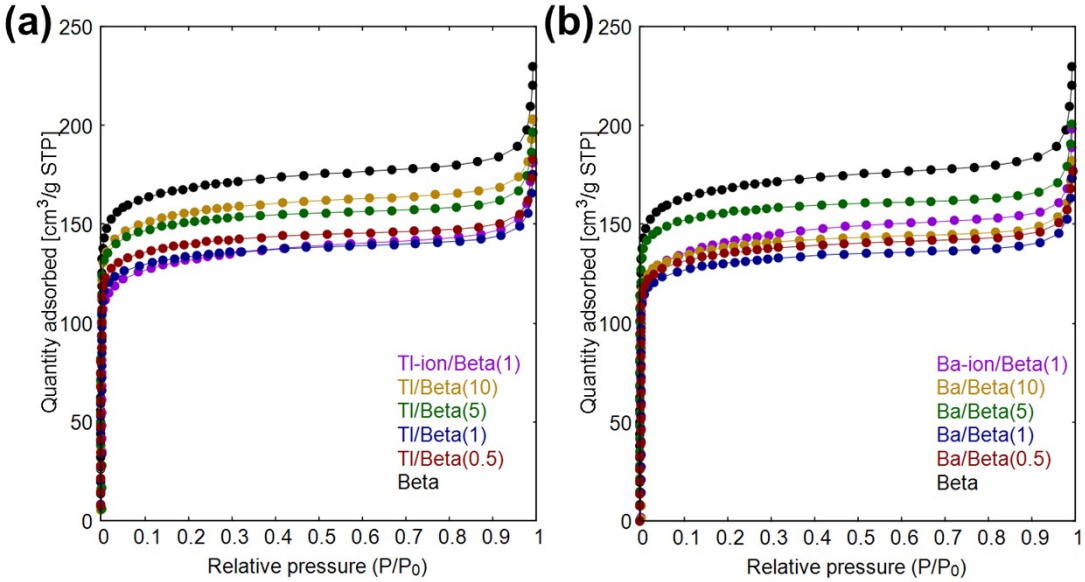


Fig. S5 Nitrogen adsorption isotherms of of (a) Tl-doped Beta and (b) Ba-doped Beta.

Table S1 Physicochemical properties of Tl-doped Beta.

	Tl [wt%]	Si/Al	S_{BET} [m^2/g]	S_{ext} [m^2/g]	S_{micro} [m^2/g]	V_{micro} [cm^3/g]
Beta	-	12.2	849.7	18.82	830.9	0.259
Tl/Beta(0.5)	0.82	12.2	707.9	11.15	696.8	0.217
Tl/Beta(1)	0.99	12.7	677.2	11.48	665.7	0.207
Tl/Beta(5)	3.53	12.4	768.3	12.64	755.7	0.233
Tl/Beta(10)	6.32	12.0	781.5	14.91	766.6	0.241
Tl-ion/Beta(1)	1.06	12.6	646.7	16.45	630.3	0.241

Table S2 Physicochemical properties of Ba-doped Beta.

	Ba [wt%]	Si/Al	S_{BET} [m^2/g]	S_{ext} [m^2/g]	S_{micro} [m^2/g]	V_{micro} [cm^3/g]
Beta	-	12.2	849.7	18.82	830.9	0.259
Ba/Beta(0.5)	0.35	12.1	687.1	11.28	675.8	0.210
Ba/Beta(1)	1.12	12.7	663.4	10.90	652.5	0.202
Ba/Beta(5)	4.74	12.4	802.0	11.75	790.3	0.241
Ba/Beta(10)	5.65	12.4	704.9	10.47	694.4	0.215
Ba-ion/Beta(1)	0.97	12.2	690.7	13.05	677.7	0.223