

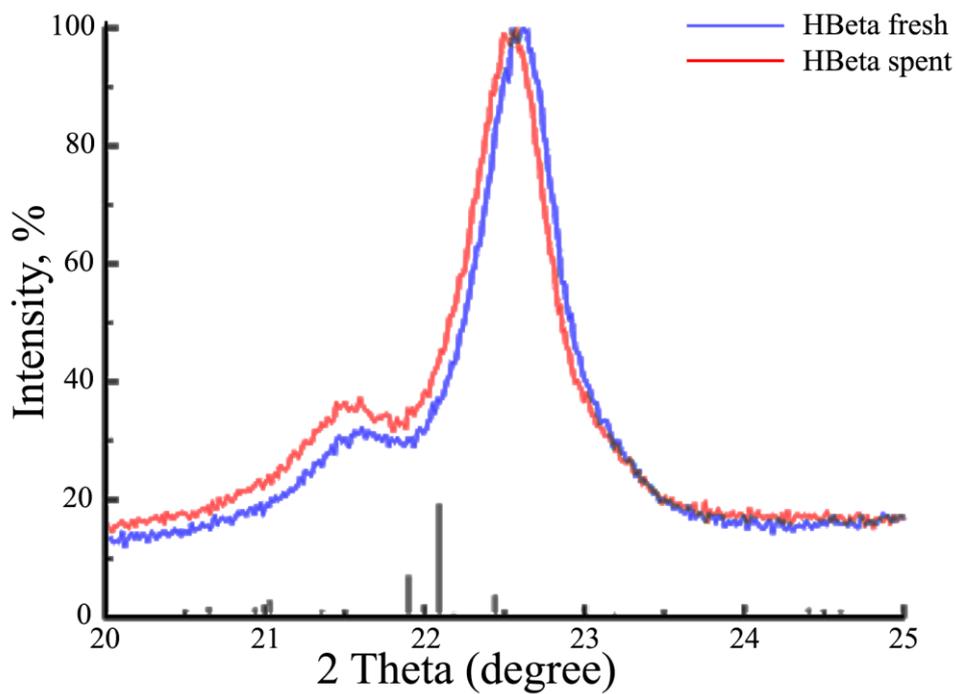
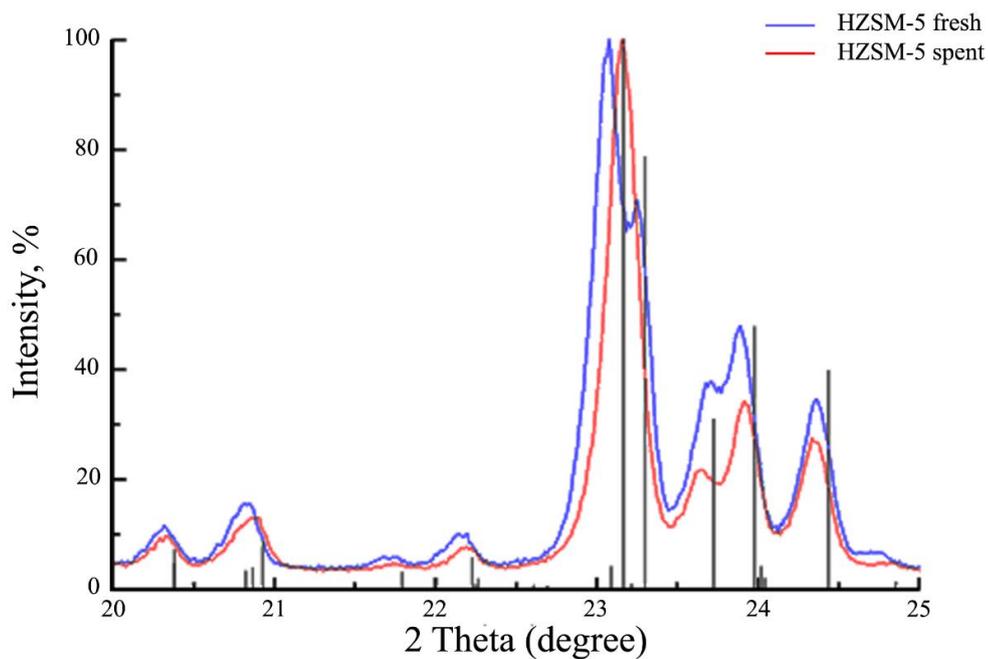
**Electronic supplementary materials** *Mendeleev Commun.*, 2020, **30**, 198–201

**Synergistic effect in Co–zeolite catalyzed transformations of hydrocarbons under Fischer–Tropsch conditions**

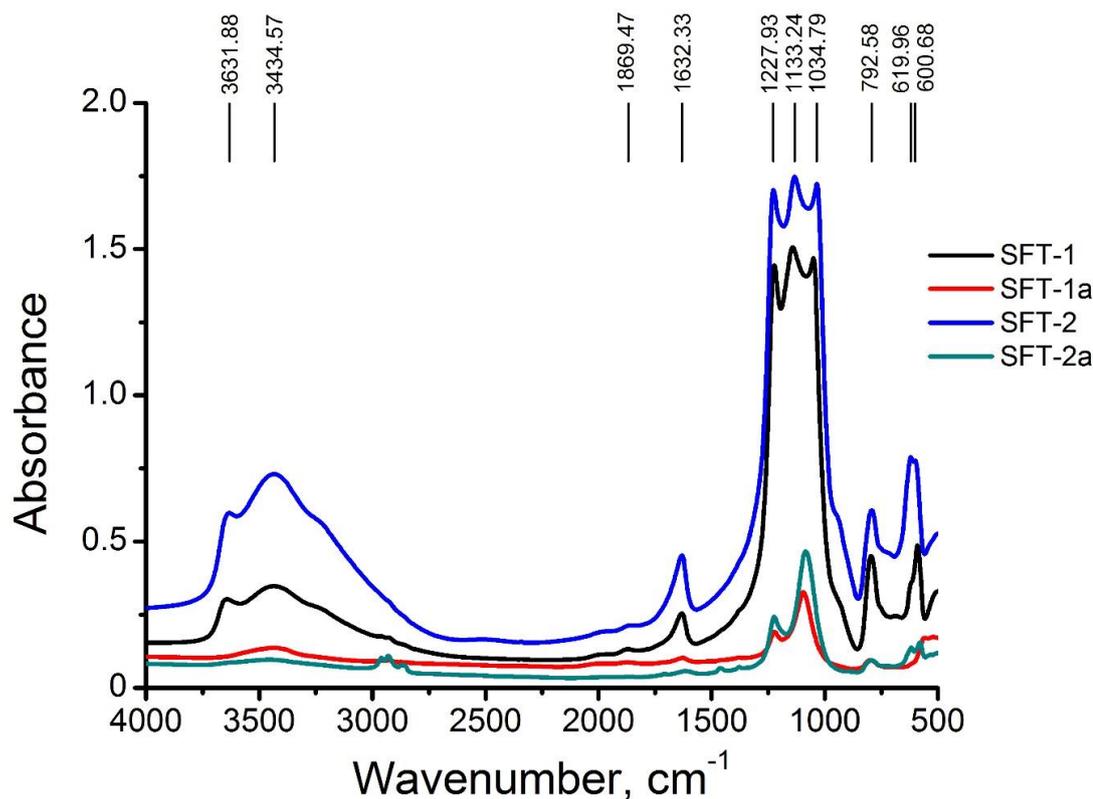
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**Figure S1** The temperature effect on the gaseous product composition depending on the composition of the feed and the type of catalyst system. Chromatograph Crystallux-5000M, catharometer, carrier gas — helium, gas flow rate  $20 \text{ ml min}^{-1}$ ; CaA molecular sieves ( $3 \text{ m} \times 3 \text{ mm}$ ) and HayeSep ( $3 \text{ m} \times 3 \text{ mm}$ ) columns; temperature-programmed mode ( $60\text{--}200^\circ\text{C}$ , heating rate  $10 \text{ K min}^{-1}$ ).



**Figure S2** Data of X-ray diffraction analysis: a change in the lattice parameter as a result of contact of the zeolite with hept-1-ene (Diffractometer PANalytical Empyrean: Cu- $K_{\alpha}$  emission, powder).



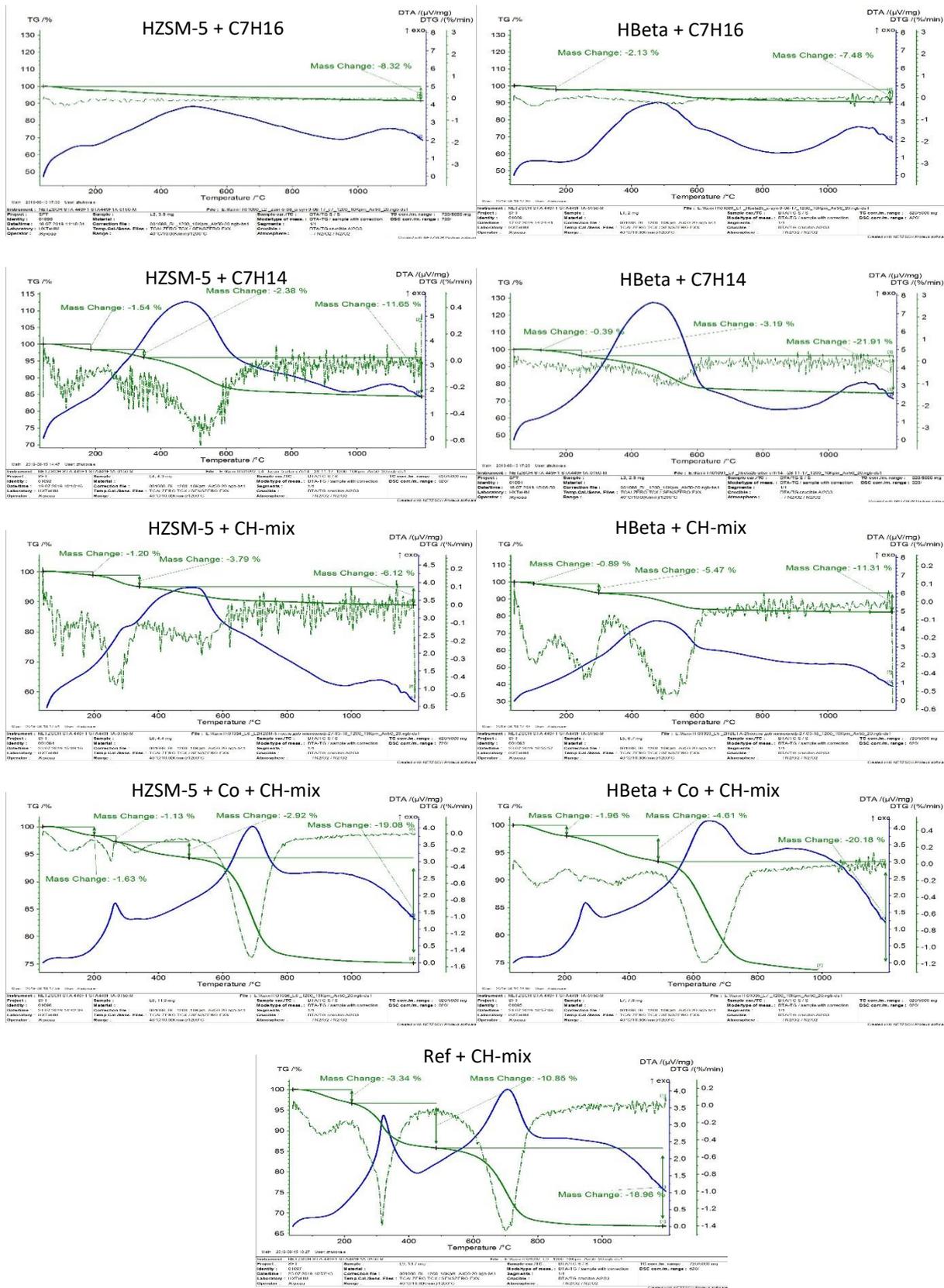
**Figure S3** Data of IR spectroscopy analysis: 1) a band disappears in the region of  $1035\text{ cm}^{-1}$ ; the  $1228\text{ cm}^{-1}$  band intensity changes (due to antisymmetric stretching vibrations in the tetrahedrons of  $\text{AlO}_4$  and  $\text{SiO}_4$ ); 2) the disappearance of the line in the region of  $1035\text{ cm}^{-1}$  indicates a change in the silicon–oxygen cell associated with a decrease in the content of Al atoms in the structure; 3) the change in the band intensities in range of  $600\text{--}620\text{ cm}^{-1}$  is associated with vibrations in the chains of alternating  $\text{SiO}_4\text{--AlO}_4$  tetrahedra, which indicates a change in the ratio of the total number of  $\text{SiO}_4$  and  $\text{AlO}_4$  tetrahedra (IR spectrometer Bruker: transmission, KBr tablets).

SFT-1 — HZSM-5 fresh

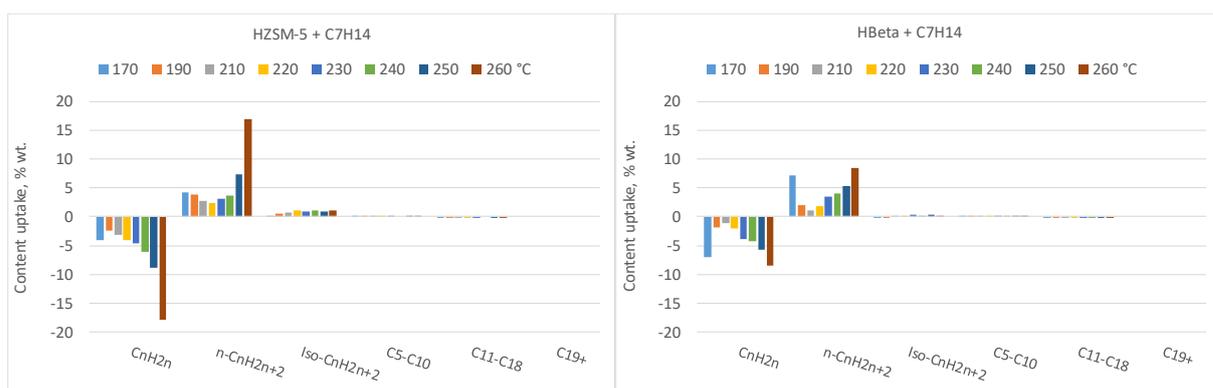
SFT-2 — HBeta fresh

SFT-1a — HZSM-5 spent (after contact with n-heptene)

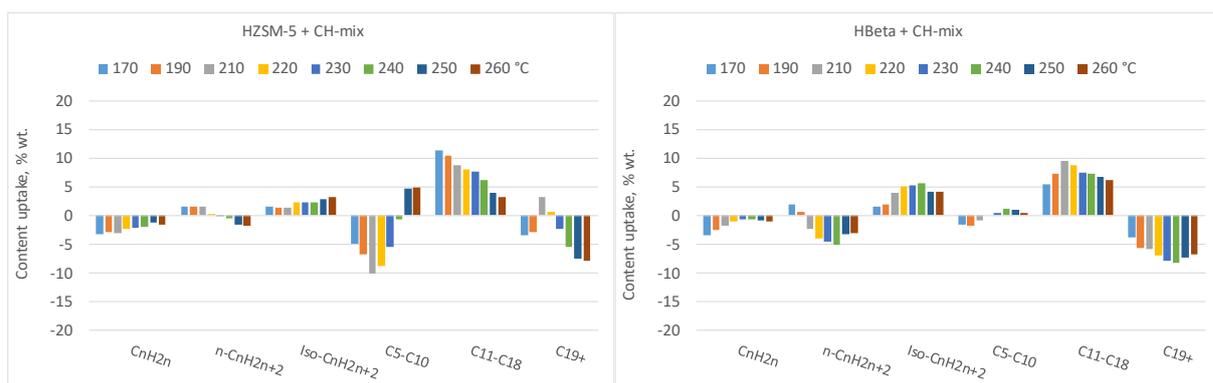
SFT-2a — HBeta spent (after contact with n-heptene)



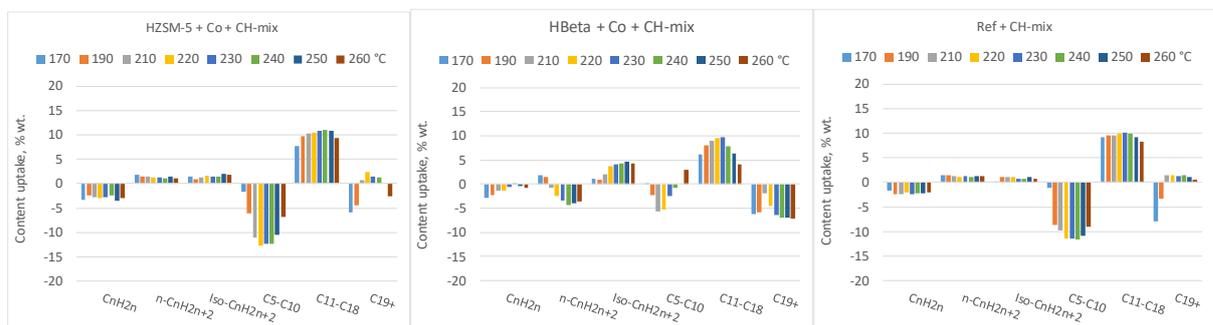
**Figure S4** Data of complex thermal analysis: the effect of the composition of the feed and the type of catalyst system (Thermal analyzer STA 449 F1 Jupiter Netzsch: air atmosphere, 40–1200°C, heating rate 10 K min<sup>-1</sup>).



*a*



*b*



*c*

**Figure S5** The temperature effect on the liquid hydrocarbons content uptake depending on the composition of the feed and the type of catalyst system. Chromatograph Crystallux-5000M, flame ionization detector; carrier gas — helium, gas flow rate  $30 \text{ ml min}^{-1}$ ; DB-Petro capillary column (50 m); temperature-programmed mode ( $50\text{--}270^\circ\text{C}$ , heating rate  $4 \text{ K min}^{-1}$ ).