Electronic Supplementary Material (ESI) for Reaction Chemistry & Engineering.

Supporting Informations

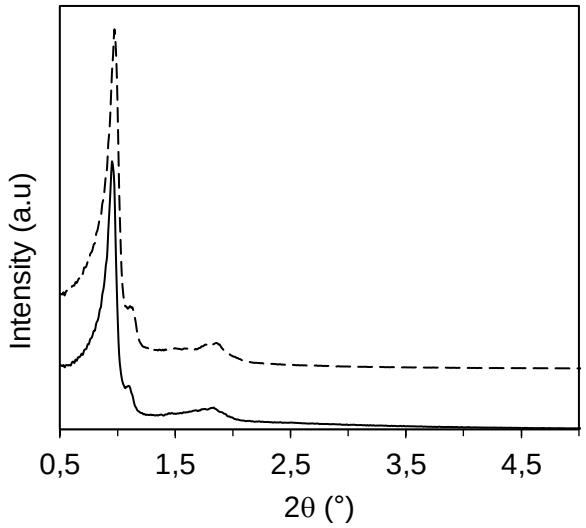

Fig. S1. X-Ray diffraction patterns of KIT-6 (full line) and Ni-AlKIT-6 (dashed line)

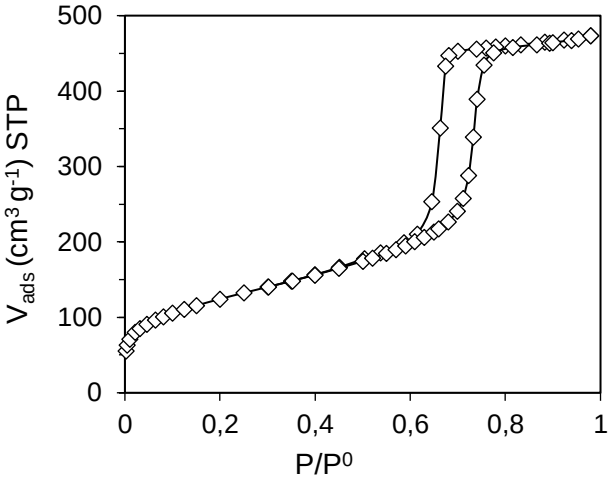

Fig. S2. Nitrogen physisorption isotherms at -196 °C for Ni-AlKIT-6

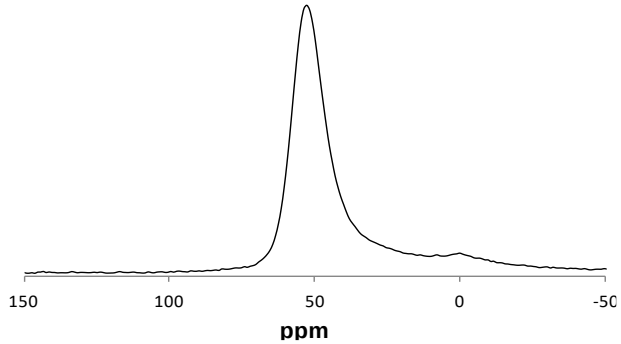

Fig. S3 27Al MAS NMR of Ni-AlKIT-6

	$Na^{+\,a}$	$NH_4^{+\,b}$	$Ni^{2+\,c}$
Na-AlKIT-6	97,2	-	-
NH_4 AlKIT-6	4,6	95,4	-
Ni AlKIT-6	1,2	41,0	57,8

a. determined as: %a(Na)/ %a(Al) × 100 with %a(X) the atomic percentage of element X. b. determined as: 100 - (%) Na site - (%) Ni site. c determined as : %a(Ni)/%a(Al) × 100. Atomic percentages were measured by EDX analysis

Fig. S4. Percentage occupancy of exchange sites by different cations

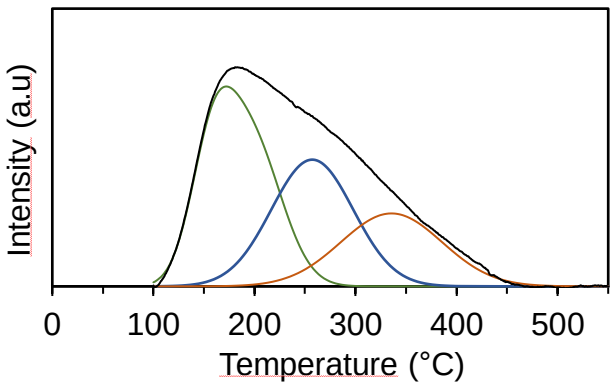

Fig. S5. Ammonia TPD profiles of Ni-AlKIT-6

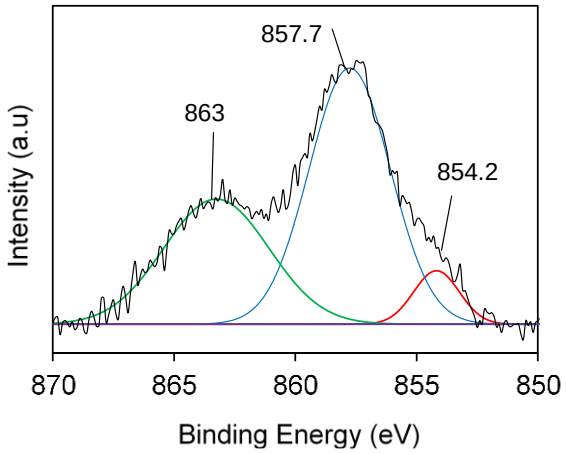

Fig. S6. Ni2p3/2 XP spectrum of the Ni-AlKIT-6 catalyst.

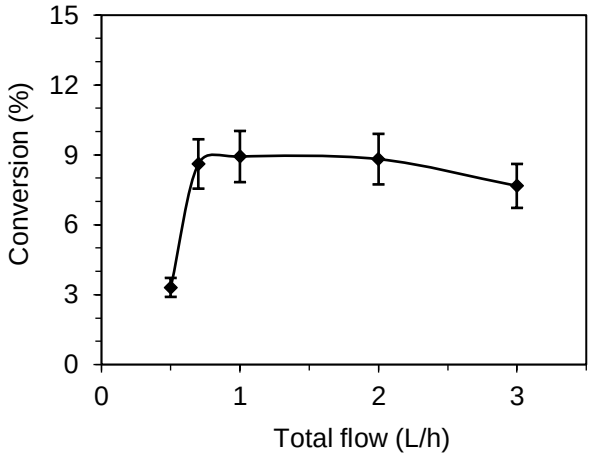

Fig S7. Ethylene conversion vs. total flow at constant residence time. Reaction conditions: 60 °C, 3,0 MPa and τ = 27,3 s.

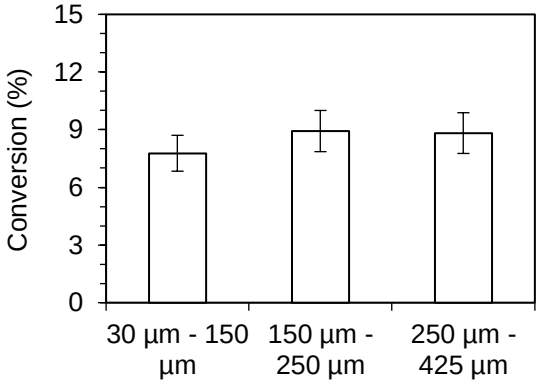

Fig. S8. Ethylene conversion with different catalyst granularity. Reaction conditions: 60 °C, 3,0 MPa and τ = 27,3 s.

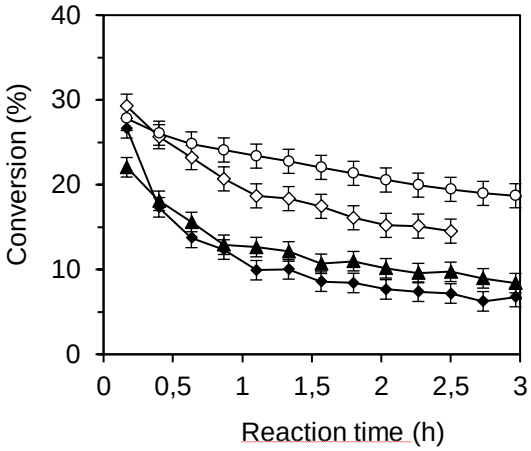

Fig. S9. Ethylene conversion vs. reaction time at different temperature: (♦) 40 °C, (▲) 60 °C, (◊) 80 °C, (○) 120 °C. Experimental conditions: Ptotal=3.0 MPa, PC2=0.75 MPa, total flow rate= 6 $L.h^{-1}$.

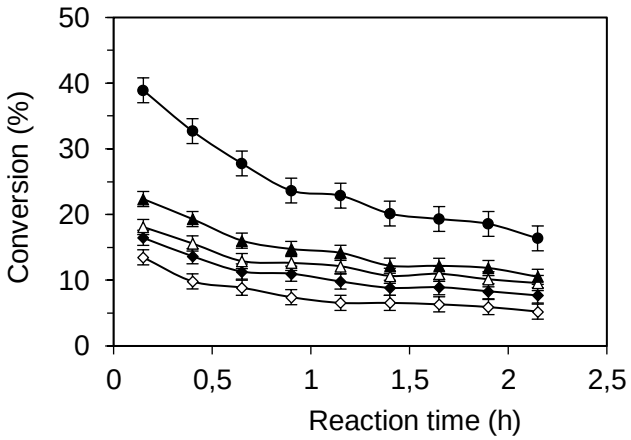

Fig. S10. Ethylene conversion vs. reaction time at different ethylene pressure: (◊) 0.1 MPa (♦) 0.4 MPa, (Δ) 0.75 MPa, (▲) 1 MPa, (●) 1.5 MPa. Experimental conditions: Ptotal=3.0 MPa, T= 60 °C, total flow rate= 6 $L.h^{-1}$

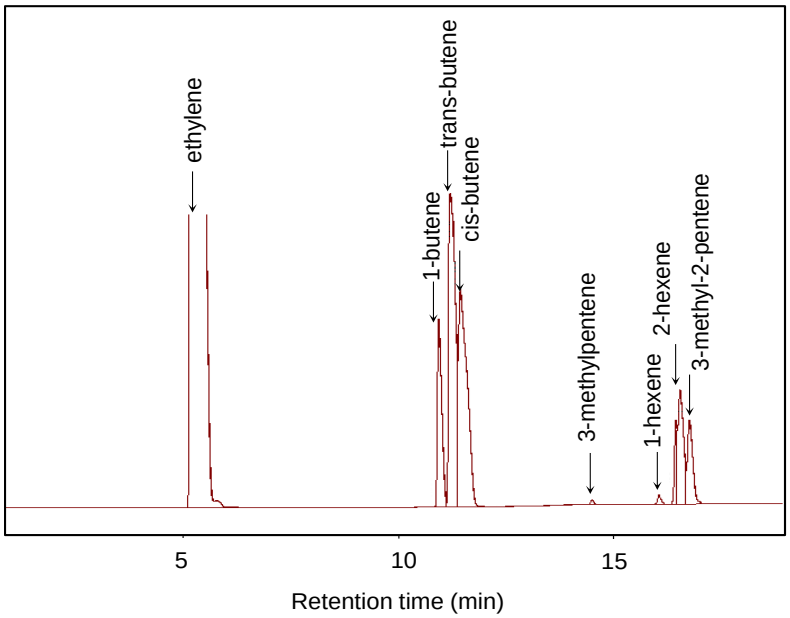

Fig. S11. Typical chromatograms and signal allocation for ethylene oligomerization over Ni-AlKIT-6.

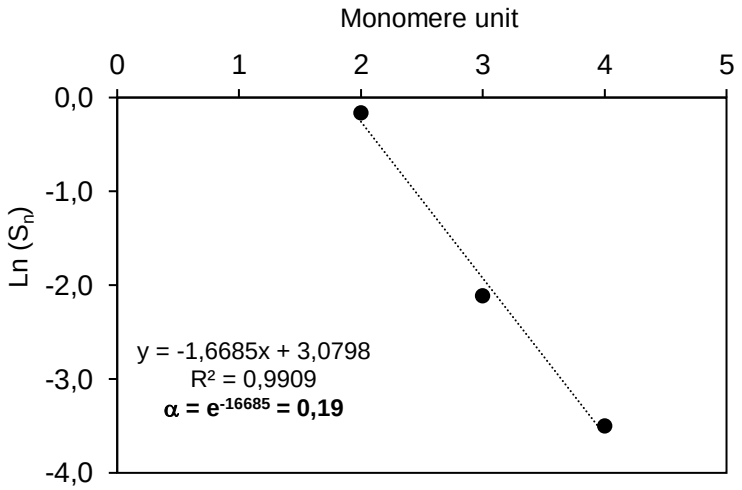

Fig. S12. Logarithm of products distribution according to their number of ethylene units. (P_{tot} = 3,0 MPa et P_{C2}= 0,75 MPa, T = 60 °C)