Table S2

Selected textural data reported in the literature for parent materials and their modified products. Data from sections 2, 3, 5, and 6.

Material	modification	S_{BET} $m^2\ g^{-1}$	S_{micro} $m^2\ g^{-1}$	V_{micro} $cm^3\ g^{-1}$	S_{meso} $m^2\ g^{-1}$	V_{meso} $cm^3\ g^{-1}$	V_{total} $cm^3\ g^{-1}$	Ref.
Section 3.1 Production of zeolitic phases through the consumption of mesoporous materials								
MCM-41/ZSM-5	TPA impregnation of MCM-41	822						1
UL/ZSM-5	TPAOH impregnation	565	435	0,158	130	1.25		2
SBA-15/ZSM-5 (24h)	TPAOH impregnation of SBA-15	310		0.024		0.46	0.48	3
SBA-15/ZSM-5	TPAOH impregnation+glycerol	230		0.037		0.15	0.19	4
Beta/MCM-41	Beta seeds addition to MCM-41 synthesis gel	298					1.9	5
BM1a(27;0) BM1b(27;4) BM1c(27;20) BM2a(27;40) BM2b(30;40) BM2c(68;40)	Beta seeds addition to MCM-48 synthesis gel (crystallization time of beta; crystallization time of beta+MCM-48)	545.3 593.8 602.6 679.8 661.1 531.8		0.018 0.012 0.009 0.016 0.019 0.072	50.8 37.0 116.9 130.3 124.3 84.5	0.067 0.095 0.143 0.162 0.148 0.102		6
10%Al-MSU-S (calc.) 10%Al-MSU-S (steam)	Seeds (FAU) assembly in the presence of CTMA	713 652					0.56 0.42	7
Al-MSU(MFI) Al-MSU(*BEA)	Seeds (*BEA and MFI) assembly in the presence of CTMA	1231 1124					1.06 1.06	8
ZSM-5/MCF NaY-MCT	Zeolite-coated mesocellular aluminosilicate foams	435 455				0.70 0.55		9
MAS-5	Seeds (MFI) assembly in the presence of CTMA	1150					1.17	10
Fch-Cat	Recrystallization of formed catalyst monomers	406		0.09				11
Section 3.2. Co-development of micro and mesoporous phases								
MZAT0.1@MSA MZAT0.2@MSA	controlled desilication and self-assembly with P123	450 451		0.11 0.08		0.31 0.43	0.42 0.51	12

Material	modification	S_{BET} $m^2 g^{-1}$	S_{micro} $m^2 g^{-1}$	V_{micro} $cm^3 g^{-1}$	S_{meso} $m^2 g^{-1}$	V_{meso} $cm^3 g^{-1}$	V_{total} $cm^3 g^{-1}$	Ref.
Beta	self-assembly of zeolite nanocrystals with cationic polymer		417	0.19		0.84		13
MS-3	Condensation of zeolite fragments	296	249	0.12			0.18	14
MT-10		437	43	0.03			0.41	
Section 3.3. Production of mesoporous phases through partial consumption of a zeolitic phase								
ZS-hexagonal prisms	ZSM-5 seed addition during SBA-15 synthesis, ZS composites with different morphologies	648		0.16		0.61	0.71	15
ZS-platelet		650		0.16		0.74	0.83	
ZS-short rod		660		0.16		0.68	0.77	
ZS-long rod		652		0.15		0.77	0.86	
ZBS-15	BEA seed addition to SBA-15 synthesis	378		0.12		0.24		16
BM(2.0)	Beta desilication (1.0, 1.5, and 2.0 M NaOH) followed by MCM-41 synthesis	874	104	0.12	770	0.78	0.90	17
BM(1.5)		716	114	0.20	602	0.67	0.97	
BM(1.0)		629	132	0.26	527	0.38	0.64	
ITQ-2/TUD-1 in situ	ITQ-2 to TUD-1 synt. gel	528					1.74	18
ITQ-2/TUD-1 ex situ	MCM-22P to TUD-1 synt. gel	494					1.42	
YTUD-10	commercial Y (10, 20, 40, and 60 wt%) to TUD-1 synthesis gel	597		0.314	597	0.74		19
YTUD-20		575		0.325	538	0.65		
YTUD-40		654		0.311	238	0.63		
YTUD-60		667		0.337	18	0.59		
SBA-15/BEA	Zeolite addition during SBA-15 synthesis	736			613	0.73	1.12	20
SBA-15/MOR		694			584	0.88	1.23	
ZM48B2	MFI seeds ageing during synthesis of MCM-48	1177					0,99	21
ZM48B3		1003					0,88	
ZM48B4		840	20	0,01			0,78	
ZM48B6		526	139	0,06			0,46	
ZSC-6	Nano-ZSM-5 (precrystallization for 6, 12, 24 36 h) to SBA-15 synthesis gel	412					0.97	22
ZSC-12		346					0.98	
ZSC-24		361					0.84	
ZSC-36		324					0.27	

Material	modification	S_{BET} $m^2\,g^{-1}$	S_{micro} $m^2\,g^{-1}$	V_{micro} $cm^3\,g^{-1}$	S_{meso} $m^2\,g^{-1}$	V_{meso} $cm^3\,g^{-1}$	V_{total} $cm^3\,g^{-1}$	Ref.
Section 3.4 Reorganisation and recrystallisation of zeolitic domains								
Mesosil 3d/150°C Mesosil 6d/130°C	Silicalite-1 precursor acidification, hydrothermal treatment	308 381		0.014 0.005			1.31 1.35	23
ZSM-5(PHAPTMS) Beta(PHAPTMS)	Zeolite silanization	586 769	272 694	0.117 0.287	314 120			24
h-ZSM-5(air) h-ZSM-5(N_2/air)	Crystallization of silanized protozeolitic units, calcination (N_2/air) impact	524 539		0.125 0.126	323 336			25
ZSM-5(APTMS) ZSM-5(ODTMS) ZSM-5(IBTES) ZSM-5(PHAPTMS)	Silanization of protozeolitic units by APTMS, ODTMS, IBTES, PHAPTMS	489 426 518 573		0.129 0.148 0.132 0.158	191 100 203 22			26
dZSM-5(1d-170°C) dZSM-5(7d-170°C) dZSM-5(10d-170°C) dZSM-5(1d-150°C) dZSM-5(7d-150°C) dZSM-5(10d-150°C)	Dendritic ZSM-5 by silanization of protozeolitic units by TPOAC	495 476 484 630 538 526	178 236 227 218 232 226	0.110 0.147 0.142 0.136 0.145 0.141	317 240 257 412 306 300	0.598 0.390 0.442 0.809 0.524 0.522	0.708 0.537 0.584 0.945 0.687 0.663	27
RT-50 RT-100 RT-200 RT-400	Embryonic ZSM-5 aged at RT plus hydrothermal treatments at 50,100, 200, 400 °C	521 640 740 725		0.20 0.29 0.33 0.33	99 28 44 39	0.09 0.02 0.04 0.04	0.29 0.31 0.37 0.37	28
RT-TMA RT-TPS RT-TMAd RT-TBA RT-THA	Embryonic zeolites prepared with OSDAs as in conventional zeolites synthesis	418 68 721 76 1095		0.17 0.28 0.29 0.30 0.47			0.17 0.30 0.30 0.31 0.48	29
ZAK-1-150°C ZAK-1-130°C ZAK-2 ZAK-3	Incision of the parent zeolite into unit-cell fragments by in situ generated base and bulky surfactants	964 846 825 763	374 430 386 531	0.15 0.18 0.16 0.21			0.75 0.59 0.57 0.48	30

Material	modification	S_{BET} $m^2\ g^{-1}$	S_{micro} $m^2\ g^{-1}$	V_{micro} $cm^3\ g^{-1}$	S_{meso} $m^2\ g^{-1}$	V_{meso} $cm^3\ g^{-1}$	V_{total} $cm^3\ g^{-1}$	Ref.
AEI(17)-TEP AEI(28)-DEDMP	IZC: AEI from FAU, N,N-diethyl-2,6-dimethylpiperidinium (DEDMP) and tetraethylphosphonium (TEP) as OSDA	560 712		0.21 0.25				31
SSZ-39	IZC: FAU to SSZ-39, N,N-dimethyl-3,5-dimethylpiperidinium as OSDA	508	493	0.25				32
FAU-CHA	IZC: FAU to SSZ-13	800	665		135			33
CHA-MPD(2.7) CHA-TMAda(6.3)	IZC: FAU to CHA, *N*,*N*,*N*-trimethyl-1-adamantylammonium hydroxide and 1-(1-methylpropyl)-4-aza-1-azoniabicyclo[2.2.2]octane hydroxide as OSDA	630 596		0.28 0.28			0.48 0.37	34
nano ZSM-5	IZC: BEA to nanoscale ZSM-5 via “OSDA-confined” strategy	478.7			110.8		0.51	35
Section 3.5 Formation of hollow zeolites								
Z5_parent Z5-1MNaOH Z5-2MNaOH Z5-4MNaOH	hollow zeolite crystals by desilication (NaOH)	314 380 374 298		0.08 0.09 0.10 0.08	139 177 132 122		0.25 0.50 0.88 1.12	36
Z50 Z50-2h	Hollow zeolite crystals by desilication (NaOH)	363 369	333 301	0.16 0.14			0.29 0.38	37
AFY1 AFY2	Hollow crystals by leaching with Oxalic acid+NH_4F	671 740		0.22 0.30	210 133	0.22 0.14		38
MRE-H	Hollow Al-rich ZSM-48 by alumination−recrystallization	303		0.072	125	0.373		39
MSS ZSM-5(1h) ZSM-5(12h) ZSM-5(24h) ZSM-5(48h) ZSM-5(168h)	Hollow ZSM-5 speres by consumption of mesoporous silica speres	406 118 13 105 344 340	2 7 4 91 287 286	0 0.001 0.001 0.03 0.13 0.14	404 111 9 14 57 54		1.02 0.89 0.07 0.06 0.22 0.24	40
MSS	Recrystallization of MSS and MCM-41	370		0.014	320		0.923	41

Material	modification	S_{BET} $m^2 g^{-1}$	S_{micro} $m^2 g^{-1}$	V_{micro} $cm^3 g^{-1}$	S_{meso} $m^2 g^{-1}$	V_{meso} $cm^3 g^{-1}$	V_{total} $cm^3 g^{-1}$	Ref.
MSS@ZSM-5_7d		24		0.010	14		0.031	
MSS@ZSM-5_9d		26		0.004	12		0.031	
MSS@ZSM-5_10d		106		0.038	19		0.076	
MSS@ZSM-5_11d		236		0.093	16		0.125	
MSS@ZSM-5_12d		390		0.153	16		0.181	
MSS@ZSM-5_13d		399		0.155	21		0.197	
MSS@ZSM-5_15d		321		0.103	101		0.258	
(S)MCM-4		1045		0	1114		0.764	
(S)MCM-41_12d		382		0.149	24		0.198	
CIT-6 (parent)	Hollow Pt/Beta by Pt/CIT-6	308		0.05	7			42
Pt-Beta	dissolution−recrystallization	628		0.24	103			
Section 4 Top-down mechanochemical approaches								
ZSM-5 raw	Milling and recrystallization of	443			1			43
ZSM-5 milled	commercial ZSM-5	223			93			
ZSM-5 recrystallised		497			69			
ZSM-5 (parent)	Milling and recrystallization of ZSM-5	434		0.173	40			44
ZSM-5 (3kW, 3 min)		438		0.170	64			
ZSM-5 (3kW, 10 min)		425		0.169	43			
ZSM-5 (3kW, 30 min)		434		0.163	46			
Section 6 Other techniques								
BEC	Stabilization of Ge-rich zeolites via	89		0.002				45
BEC+Al	postsynthesis alumination on the	93		0.003				
BEC+Al-HCl	example of ITQ-17 (BEC)	239		0.047				
BEC+Al-HCl-Al		251		0.045				
BEC+Al-HCl-Al-HCl		303		0.064				
BEC+Al-HCl-Al-HCl(600C)		609		0.174				
ITQ-22(Si/Ge_{gel}10)	Treated 2xHCl (37wt.%)	492		0.185		0.112		46
ITQ-22(Si/Ge_{gel}5)		483		0.18		0.135		
ITQ-22(Si/Ge_{gel}3)		477		0.17		0.148		
HPM-16	Repeated degermanation in alcoholic acidic solution	525		0.20				47

Material	modification	S_{BET} m^2 g^{-1}	S_{micro} m^2 g^{-1}	V_{micro} cm^3 g^{-1}	S_{meso} m^2 g^{-1}	V_{meso} cm^3 g^{-1}	V_{total} cm^3 g^{-1}	Ref.
ITH-13	ZEOL$_{calc}$/Al - treatment of calcined zeolite with 1M Al(NO_3)$_3$ (one-step degermanation and alumination) ZEOL$_{calc}$/HCl+TEOS/Al - treatment of calcined zeolite with HCl/TEOS (degermanation plus Si incorporation to D4R) followed by alumination 1M Al(NO_3)$_3$			0.12			0.20	48
ITH-13$_{calc}$/Al				0.14			0.32	
ITH-13$_{calc}$/HCl+TEOS/Al				0.05			0.11	
ITH-2				0.13			0.18	
ITH-2$_{calc}$/Al				0.13			0.25	
ITH-2$_{calc}$/HCl+TEOS/Al				0.02			0.04	
IWW-7				0.16			0.30	
IWW-7$_{calc}$/Al				0.19			0.39	
IWW-7$_{calc}$/HCl+TEOS/Al				0.09			0.46	
IWW-3				0.17			0.30	
IWW-3$_{calc}$/Al				0.18			0.32	
IWW-3$_{calc}$/HCl+TEOS/Al				0.14			0.39	
UTL-6				0.21			0.24	
UTL-6$_{calc}$/HCl+TEOS/Al				0.14			0.36	
UTL-4	Degermanation by water treatment followed by Sn introduction by wet impregnation or Zr introduction by vapour-state ion-exchange	470		0.20			0.03	49
SnUTL-4		478		0.19			0.11	
ZrUTL-4		384		0.16			0.09	
*CTH-4		360		0.15			0.05	
Sn*CTH-4		421		0.16			0.08	
Zr*CTH-4		277		0.11			0.05	
*BEA-com		558		0.18			0.60	
Sn*BEA-com		500		0.15			0.49	
Zr*BEA-com		540		0.16			0.42	
TS-1(Si/Ti=31.8)	TS-1 detitanated with ethanolamine and hydrothermal treatment, R is regenerated catalyst	307	284	0.157	23	0.0230		50
M-TS-1(Si/Ti=27)		310	275	0.194	35	0.0327		
R-TS-1(Si/Ti=25.3)		310	297	0.163	13	0.0143		
TS-1(Si/Ti=46)	TPAOH + hydrothermal treatment	495	462	0.168	33	0.014	0.182	51
TT-0.05(Si/Ti=42)		495	424	0.174	81	0.088	0.262	
TT-0.1(Si/Ti=44)		500	426	0.173	84	0.089	0.262	
TT-0.3(Si/Ti=42)		497	413	0.172	84	0.104	0.276	
TT-0.4(Si/Ti=42)		506	432	0.175	83	0.123	0.298	

Material	modification	S_{BET} $m^2\ g^{-1}$	S_{micro} $m^2\ g^{-1}$	V_{micro} $cm^3\ g^{-1}$	S_{meso} $m^2\ g^{-1}$	V_{meso} $cm^3\ g^{-1}$	V_{total} $cm^3\ g^{-1}$	Ref.
TT-0.5(Si/Ti=44)		495	442	0.170	107	0.168	0.338	
TS-1(Si/Ti=20.4)	Etching at RT with NH_4F–HF (1A)	375	258	0.12	118	0.04		52
HTS-1A(Si/Ti=23.5)	plus treatment with NaOH & NH_4F–HF	399	273	0.13	126	0.08		
HTS-1B(22.1)	(1B)	416	277	0.13	139	0.10		
ZSM-5(Si/Al=200)	Desilication in 0.2 M NaOH + 10 min.	275.9	259.1	0.119	16.7	0.092		53
MZ-200-MW	microwave (700 W) or 2 h, 80 °C	307.3	100.4	0.041	206.9	0.316		
MZ-200-TH		304.1	84.0	0.340	220.1	0.375		
ZSM-5(Si/Al=15)		330.6	300.4	0.112	30.2	0.033		
MZ-15-MW		338.6	295.4	0.120	43.3	0.047		
MZ-15-TH		363.3	274.8	0.101	88.5	0.134		
Parent Y	Combined microwave (MW)-assisted	867	858	0.3	9	0.01	0.36	54
HCl-Y	dealumination (acids: HCl, oxalic,	600	523	0.24	77	0.10	0.34	
OA-Y	citric, tartaric,	772	626	0.26	148	0.16	0.42	
TA-Y	diethylenetriaminepentaacetic,	742	602	0.25	140	0.15	0.40	
CA-Y	acid) followed by hydrothermal alkaline	531	261	0.12	270	0.32	0.44	
DA-Y	treatment	414	200	0.08	412	0.22	0.30	
Parent	MW-assisted dealumination (HCl,	867	858	0.35	9	0.01		55
MWEA	H_4EDTA, Na_4EDTA, Na_4EDTA/HCl)	484	383	0.16	101	0.09		
MWEN	followed by desilication with 0.2 M	831	738	0.30	69	0.09		
MWHCl	NaOH	287	164	0.07	113	0.12		
MWENH		474	403	0.16	93	0.04		
MWEA+HT		747	675	0.31	72	0.10		
MWEN+HT		936	822	0.32	114	0.11		
MWHCl+HT		340	303	0.16	37	0.03		
MWENH+HT		807	649	0.27	158	0.18		
Y parent(3.4)	MW-assisted dealumination by 0.2M	817	873	0.32	36	0.03	0.35	56
MZM-MW-1min-50°C(4.8)	EDTA, Si/Al in parentheses	210	31	0.01	179	0.34	0.35	
MZM-MW-1min-100°C(12)		280	19	0.01	261	0.37	0.38	
MZM-MW-30min-100°C(10.7)		236	18	0.01	218	0.34	0.35	
MZM-HT-6h-100°C(13.0)		242	0	0	242	0.40	0.40	

Material	modification	S_{BET} $m^2\,g^{-1}$	S_{micro} $m^2\,g^{-1}$	V_{micro} $cm^3\,g^{-1}$	S_{meso} $m^2\,g^{-1}$	V_{meso} $cm^3\,g^{-1}$	V_{total} $cm^3\,g^{-1}$	Ref.
Fe/USY/im	Zeolites iron-exchanged by impregnation (im) and sonication (s, 20 min, 60 W, 20 kHz)	374		0.126			0.273	57
Fe/USY/s		311		0.085			0.236	
FeY/im		274		0.083			0.229	
FeY/s		448		0.160			0.323	
Fe/MFI/15/im		307		0.111			0.270	
Fe/MFI/15/s		291		0.108			0.259	
Fe/MFI/37/im		231		0.096			0.255	
Fe/MFI/37/s		337		0.103			0.236	
NaBEA(12.5)	Zeolites Cu,Co,Fe-exchanged by ion exchange or sonication (sonication energy 65.8 to 67.8 J), Si/Al in parentheses	762		0.14			0.36	58
NaBEA(37.5)		868		0.21			0.65	
CuBEA(12.5)ex		730		0.17			0.60	
CuBEA(12.5)s		744		0.15			0.52	
CuBEA(37.5)ex		711		0.15			0.53	
CuBEA(37.5)s		737		0.14			0.46	
CoBEA(12.5)ex		432		0.09			0.25	
CoBEA(12.5)s		533		0.11			0.30	
CoBEA(37.5)ex		440		0.12			0.28	
CoBEA(37.5)s		542		0.15			0.34	
FeBEA(37.5)ex		743		0.16			0.47	
FeBEA(37.5)s		759		0.16			0.44	
Parent Y(2.60)	Y zeolite dealuminated with citric acid and H_4EDTA followed with NaOH desilication – sonication in 0.2 M NaOH (50–60 Hz). Si/Al in parentheses	867	858	0.35	0.01	9	0.36	59
EAY-0.1-30min-S(3.88)		804	722	0.33	0,12	82	0.45	
EAY-0.1-30min-HT(3.88)		818	757	0.34	0.09	61	0.43	
EAY-0.1-1h-S(4.05)		773	713	0.33	0.10	60	0.41	
EAY-0.1-1h-HT(4.39)		818	759	0.34	0.09	59	0.43	
EAY-0.1-3h-S(3.98)		769	706	0.32	0.10	63	0.42	
EAY-0.1-3h-HT(3.86)		770	711	0.32	0.09	59	0.41	
EAY-0.1-6h-S(3.86)		969	568	0.25	0.19	128	0.45	
EAY-0.1-6h-HT(4.25)		681	521	0.23	0.22	160	0.46	

Material	modification	S_{BET} $m^2\ g^{-1}$	S_{micro} $m^2\ g^{-1}$	V_{micro} $cm^3\ g^{-1}$	S_{meso} $m^2\ g^{-1}$	V_{meso} $cm^3\ g^{-1}$	V_{total} $cm^3\ g^{-1}$	Ref.
BEC-parent(2.9)	low-temperature $SiCl_4$ and $TiCl_4$ plasma treatment of as-synthesized Ge-silicate (BEC); discharge plasma, 50 Hz sinusoidal power supply (2 kV)	64		0.004				60
Ti-BEC-plasma(3.5)		373		0.145				
Si-BEC-plasma(4.2)		417		0.150				
Ti,Si-BEC-plasma(4.2)		411		0.150				
Ti-BEC-calcined		263		0.122				
Si-BEC-calcined		279		0.11				
SSZ-13	Ultrafast recrystallisation	685		0.24				61
MOR	Pure nano-MOR from milled, recrystallized natural zeolite: MOR - main phase, clinoptilolite (HEU) - impurities	240		0.04		0.36	0.40	62
Parent ZSM-5(30.0)	Milled (M) and recrystallized (R) nano-ZSM-5, Si/Al in parentheses	300		0.14	20			63
M(29.7)		177		0.04	97			
MR(30.5)		331		0.13	38			
$MR_{CTAB\ 0.004}$(30.6)		381		0.12	98			
$MR_{CTAB\ 0.012}$(29.9)		377		0.13	110			
Silicalite-1	solvent-free mechanochemical treatment (grinding - H) in NH_4F and TPABr followed by hydrothermal treatment (HT)	434		0.18	28.0	0.04		64
G5min		412		0.19	21.0	0.03		
G5min+HT1h		403		0.21	32.5	0.01		
G5min+HT15h		399		0.18	30.0	0.03		
Solid ZSM-5(N_2)	Hollow nanozeolites by dissolution–recrystallization in TPAOH, porosity determined by N_2 and Ar adsorption	507	336	0.15	171		0.49	65
Hollow ZSM-5(N_2)		443	338	0.15	105		0.74	
Solid ZSM-5(Ar)		539	418	0.18	121		0.66	
Hollow ZSM-5(Ar)		522	445	0.18	77		0.75	
Hollow, double shell ZSM-5(Ar)		403	246	0.10	157		0.51	

References to Table S2

1. M. J. Verhoef, P. J. Kooyman, J. C. Van Der Waal, M. S. Rigutto, J. A. Peters and H. Van Bekkum, *Chemistry of Materials*, 2001, **13**, 683-687.
2. D. Trong On and S. Kaliaguine, *Angewandte Chemie International Edition*, 2001, **40**, 3248-3251.

3. A. A. Campos, C. R. Silva, M. Wallau, L. D. Dimitrov and E. A. Urquieta-González, in *Studies in Surface Science and Catalysis*, eds. J. Čejka, N. Žilková and P. Nachtigall, Elsevier, 2005, vol. 158, pp. 573-580.
4. A. A. Campos, C. R. Silva, L. D. Dimitrov, M. Wallau and E. A. Urquieta-Gonzalez, in *Studies in Surface Science and Catalysis*, eds. E. M. Gaigneaux, M. Devillers, D. E. De Vos, S. Hermans, P. A. Jacobs, J. A. Martens and P. Ruiz, Elsevier, 2006, vol. 162, pp. 347-354.
5. P. Prokesova, S. Mintova, J. Cejka and T. Bein, *Materials Science & Engineering C-Biomimetic and Supramolecular Systems*, 2003, **23**, 1001-1005.
6. P. Prokešová-Fojtíková, S. Mintova, J. Čejka, N. Žilková and A. Zukal, *Microporous and Mesoporous Materials*, 2006, **92**, 154-160.
7. Y. Liu, W. Z. Zhang and T. J. Pinnavaia, *Journal of the American Chemical Society*, 2000, **122**, 8791-8792.
8. Y. Liu, W. Z. Zhang and T. J. Pinnavaia, *Angewandte Chemie-International Edition*, 2001, **40**, 1255-1258.
9. D. Trong On and S. Kaliaguine, *Journal of the American Chemical Society*, 2003, **125**, 618-619.
10. Z. Zhang, Y. Han, F.-S. Xiao, S. Qiu, L. Zhu, R. Wang, Y. Yu, Z. Zhang, B. Zou, Y. Wang, H. Sun, D. Zhao and Y. Wei, *Journal of the American Chemical Society*, 2001, **123**, 5014-5021.
11. J. Zhou, J. Teng, L. Ren, Y. Wang, Z. Liu, W. Liu, W. Yang and Z. Xie, *Journal of Catalysis*, 2016, **340**, 166-176.
12. D. Wang, L. Xu and P. Wu, *J. Mater. Chem. A*, 2014, **2**, 15535-15545.
13. J. Song, L. Ren, C. Yin, Y. Ji, Z. Wu, J. Li and F.-S. Xiao, *The Journal of Physical Chemistry C*, 2008, **112**, 8609-8613.
14. F. N. Gu, F. Wei, J. Y. Yang, N. Lin, W. G. Lin, Y. Wang and J. H. Zhu, *Chemistry of Materials*, 2010, **22**, 2442-2450.
15. Y. Lv, X. Wang, D. Gao, X. Ma, S. Li, Y. Wang, G. Song, A. Duan and G. Chen, *Industrial & Engineering Chemistry Research*, 2018, **57**, 14031-14043.
16. V. S. P. Ganjala, C. K. P. Neeli, C. V. Pramod, M. Khagga, K. S. R. Rao and D. R. Burri, *Catalysis Communications*, 2014, **49**, 82-86.
17. L. Gao, Z. Shi, U. J. Etim, P. Wu, D. Han, W. Xing, S. Mintova, P. Bai and Z. Yan, *Microporous and Mesoporous Materials*, 2019, **277**, 17-28.
18. C. C. Aquino, H. O. Pastore, A. F. Masters and T. Maschmeyer, *ChemCatChem*, 2011, **3**, 1759-1762.
19. M. S. Hamdy and G. Mul, *ChemCatChem*, 2013, **5**, 3156-3163.
20. K. Jaroszewska, M. Fedyna and J. Trawczyński, *Applied Catalysis B: Environmental*, 2019, **255**, 117756.
21. Y. Xia and R. Mokaya, *Journal of Materials Chemistry*, 2004, **14**, 863.
22. X. H. Vu, U. Bentrup, M. Hunger, R. Kraehnert, U. Armbruster and A. Martin, *Journal of Materials Science*, 2014, **49**, 5676-5689.
23. W. Stevens, V. Meynen, E. Bruijn, O. Lebedev, G. Van Tendeloo, P. Cool and E. Vansant, *Microporous and Mesoporous Materials*, 2008, **110**, 77-85.
24. D. P. Serrano, J. Aguado, J. M. Escola, J. M. Rodriguez and A. Peral, *Chemistry of Materials*, 2006, **18**, 2462-2464.
25. D. P. Serrano, R. A. Garcia, M. Linares and B. Gil, *Catalysis Today*, 2012, **179**, 91-101.
26. D. P. Serrano, J. Aguado, J. M. Escola, J. M. Rodriguez and A. Peral, *Journal of Materials Chemistry*, 2008, **18**, 4210.
27. M. del Mar Alonso-Doncel, C. Ochoa-Hernández, G. Gómez-Pozuelo, A. Oliveira, J. González-Aguilar, Á. Peral, R. Sanz and D. P. Serrano, *Journal of Energy Chemistry*, 2023, **80**, 77-88.
28. K.-G. Haw, J.-M. Goupil, J.-P. Gilson, N. Nesterenko, D. Minoux, J.-P. Dath and V. Valtchev, *New Journal of Chemistry*, 2016, **40**, 4307-4313.

29. M. Akouche, J.-P. Gilson, N. Nesterenko, S. Moldovan, D. Chateigner, H. E. Siblani, D. Minoux, J.-P. Dath and V. Valtchev, *Chemistry of Materials*, 2020, **32**, 2123-2132.
30. R. Kumar Parsapur, A. M. Hengne, G. Melinte, O. Refa Koseoglu, R. P. Hodgkins, A. Bendjeriou-Sedjerari, Z. Lai and K. W. Huang, *Angewandte Chemie International Edition*, 2024, **63,** e2023, 14217.
31. T. Sonoda, T. Maruo, Y. Yamasaki, N. Tsunoji, Y. Takamitsu, M. Sadakane and T. Sano, *Journal of Materials Chemistry A*, 2015, **3**, 857-865.
32. N. Martín, C. R. Boruntea, M. Moliner and A. Corma, *Chemical Communications*, 2015, **51**, 11030-11033.
33. X. Peng, L. Chen, L. You, Y. Jin, C. Zhang, S. Ren, F. Kapteijn, X. Wang and X. Gu, *Angewandte Chemie International Edition*, 2024, **63,** e202405969.
34. Z. Wu, H. Sun, Q. Deng, L. Han, P. Lv, H. Chen, H. Duan and K. Zhu, *ChemCatChem*, 2024, **16,** e202401010.
35. L. Xu, Y. Yuan, Q. Han, L. Dong, L. Chen, X. Zhang and L. Xu, *Catalysis Science & Technology*, 2020, **10**, 7904-7913.
36. T. Li, Z. Ma, F. Krumeich, A. J. Knorpp, A. B. Pinar and J. A. Van Bokhoven, *ChemNanoMat*, 2018, **4**, 992-999.
37. D. Fodor, F. Krumeich, R. Hauert and J. A. Van Bokhoven, *Chemistry – A European Journal*, 2015, **21**, 6272-6277.
38. Y. Shen, M. Xu, J. Li, Z. Qin, C. Wang, S. Mintova and X. Liu, *Inorganic Chemistry Frontiers*, 2021, **8**, 2144-2152.
39. W. Liu, J. Li, Q. Yu, H. Chen, W. Liu, Z. Yang, X. Liu, Z. Xu, S. Xu, X. Zhu and X. Li, *ACS Applied Materials & Interfaces*, 2022, **14**, 52025-52034.
40. Z. Wang, Y. Liu, J.-g. Jiang, M. He and P. Wu, *Journal of Materials Chemistry*, 2010, **20**, 10193-10199.
41. M. Rutkowska, W. Dubiel, A. Kowalczyk, A. Jankowska, Z. Piwowarska, K. Maćkosz, J. Kawałko, B. Gil and L. Chmielarz, *Journal of Physics and Chemistry of Solids*, 2025, **201**, 112645.
42. A. R. Morgado Prates, C. Pagis, F. C. Meunier, L. Burel, T. Epicier, L. Roiban, S. Koneti, N. Bats, D. Farrusseng and A. Tuel, *Crystal Growth & Design*, 2018, **18**, 592-596.
43. T. Wakihara, A. Ihara, S. Inagaki, J. Tatami, K. Sato, K. Komeya, T. Meguro, Y. Kubota and A. Nakahira, *Crystal Growth & Design*, 2011, **11**, 5153-5158.
44. S. Inagaki, K. Sato, S. Hayashi, J. Tatami, Y. Kubota and T. Wakihara, *ACS Applied Materials & Interfaces*, 2015, **7**, 4488-4493.
45. F. Gao, M. Jaber, K. Bozhilov, A. Vicente, C. Fernandez and V. Valtchev, *Journal of the American Chemical Society*, 2009, **131**, 16580-16586.
46. L. Burel, N. Kasian and A. Tuel, *Angewandte Chemie International Edition*, 2014, **53**, 1360-1363.
47. Z. R. Gao, S. R. G. Balestra, J. Li and M. A. Camblor, *Angewandte Chemie International Edition*, 2021, **60**, 20249-20252.
48. M. V. Shamzhy, P. Eliašová, D. Vitvarová, M. V. Opanasenko, D. S. Firth and R. E. Morris, *Chemistry – A European Journal*, 2016, **22**, 17377-17386.
49. J. Zhang, T. Zakeri, Q. Yue, M. Kubů, R. Barakov, J. Přech, M. Opanasenko and M. Shamzhy, *Catalysis Today*, 2024, **440**, 114825.
50. Y. Xue, Y. Xie, H. Wei, Y. Wen, X. Wang and B. Li, *New Journal of Chemistry*, 2014, **38**, 4229.
51. Y. Jiao, A.-L. Adedigba, Q. He, P. Miedziak, G. Brett, N. F. Dummer, M. Perdjon, J. Liu and G. J. Hutchings, *Catalysis Science & Technology*, 2018, **8**, 2211-2217.
52. S. Du, X. Chen, Q. Sun, N. Wang, M. Jia, V. Valtchev and J. Yu, *Chemical Communications*, 2016, **52**, 3580-3583.
53. Q. G. Ho, L. T. Bui, P. T. T. Nguyen, D. T. H. Ngo and L. Q. Nguyen, *Chemical Engineering Transactions*, 2023, **106**, 907-912.

54. R. Zhang, D. Raja, Y. Zhang, Y. Yan, A. A. Garforth, Y. Jiao and X. Fan, *Topics in Catalysis*, 2020, **63**, 340-350.
55. R. Zhang, R. Zou, W. Li, Y. Chang and X. Fan, *Microporous and Mesoporous Materials*, 2022, **333**, 111736.
56. S. Abdulridha, Y. Jiao, S. Xu, R. Zhang, A. A. Garforth and X. Fan, *Frontiers in Chemistry*, 2020, **8,** 482.
57. D. Chlebda, P. Stachurska, R. Jędrzejczyk, Ł. Kuterasiński, A. Dziedzicka, S. Górecka, L. Chmielarz, J. Łojewska, M. Sitarz and P. Jodłowski, *Nanomaterials*, 2018, **8**, 21.
58. N. Sobuś, B. Michorczyk, M. Piotrowski, Ł. Kuterasiński, D. K. Chlebda, J. Łojewska, R. J. Jędrzejczyk, P. Jodłowski, P. Kuśtrowski and I. Czekaj, *Catalysis Letters*, 2019, **149**, 3349-3360.
59. R. Zhang, P. Zhong, H. Arandiyan, Y. Guan, J. Liu, N. Wang, Y. Jiao and X. Fan, *Frontiers of Chemical Science and Engineering*, 2020, **14**, 275-287.
60. M. El-Roz, L. Lakiss, A. Vicente, K. N. Bozhilov, F. Thibault-Starzyk and V. Valtchev, *Chem. Sci.*, 2014, **5**, 68-80.
61. Z. Liu, N. Nomura, D. Nishioka, Y. Hotta, T. Matsuo, K. Oshima, Y. Yanaba, T. Yoshikawa, K. Ohara, S. Kohara, T. Takewaki, T. Okubo and T. Wakihara, *Chemical Communications*, 2015, **51**, 12567-12570.
62. T. Kurniawan, O. Muraza, A. S. Hakeem and A. M. Al-Amer, *Crystal Growth & Design*, 2017, **17**, 3313-3320.
63. G. T. M. Kadja, T. R. Suprianti, M. M. Ilmi, M. Khalil, R. R. Mukti and Subagjo, *Microporous and Mesoporous Materials*, 2020, **308**, 110550.
64. J. Huang, Y. Fan, G. Zhang and Y. Ma, *RSC Advances*, 2020, **10**, 13583-13590.
65. C. Dai, A. Zhang, M. Liu, X. Guo and C. Song, *Advanced Functional Materials*, 2015, **25**, 7479-7487.