

Electronic Supplementary Information

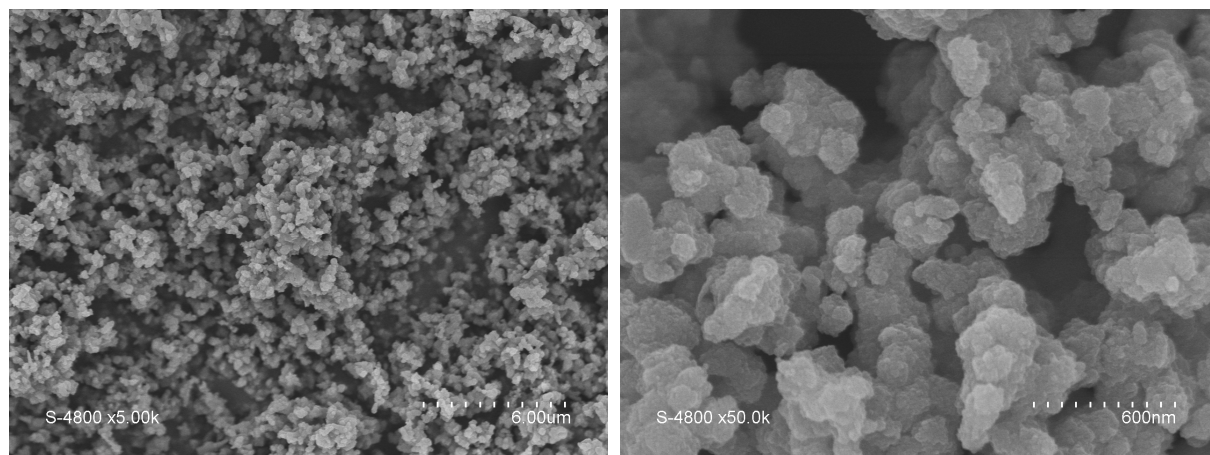
Pore size control and organocatalytic properties of
nanostructured silica hybrid materials containing amino and
ammonium groups

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Moreau*

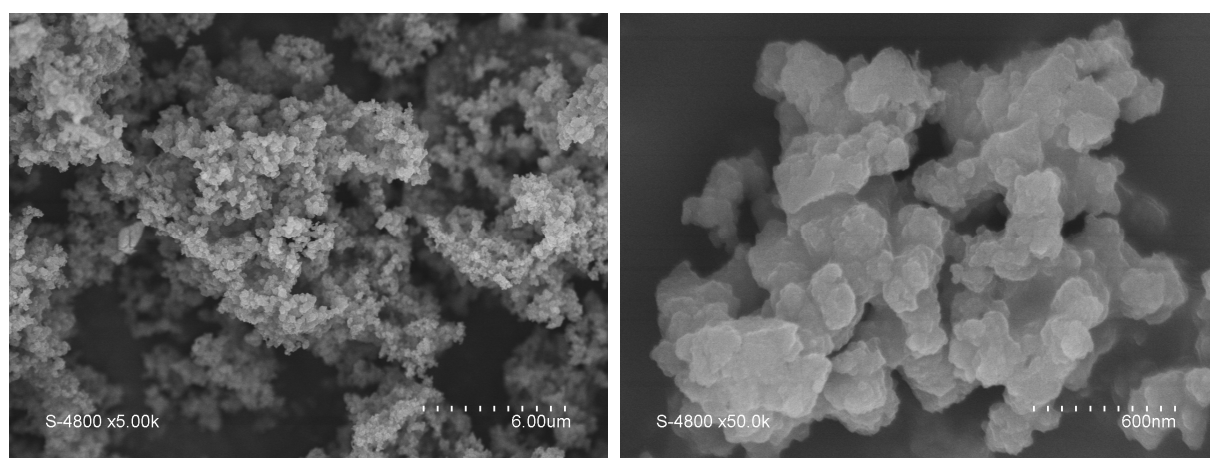
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Summary

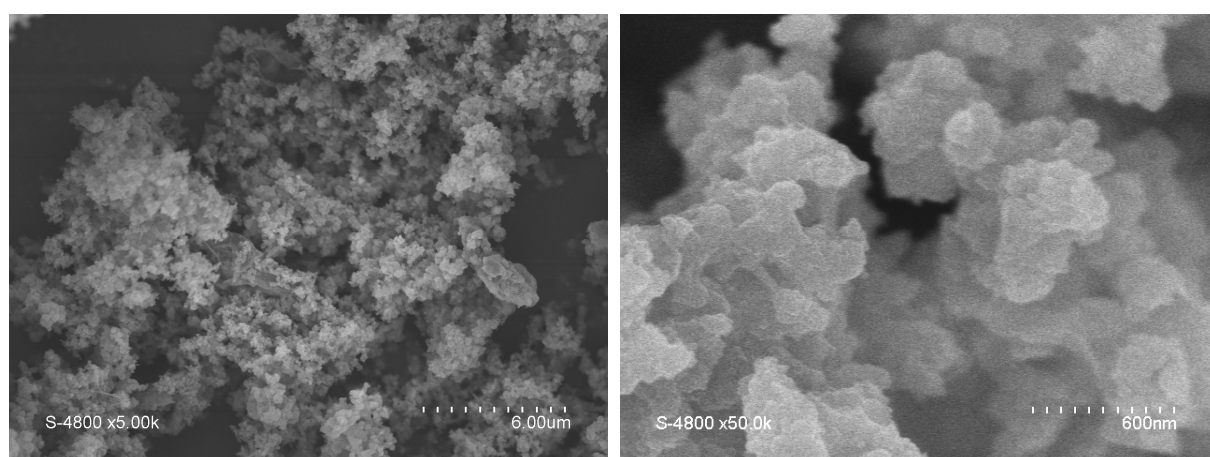
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Material A16A18



Material 1/5



Material 1/10

Photos1-6: SEM-image of materials A16A18, 1/5 and 1/10

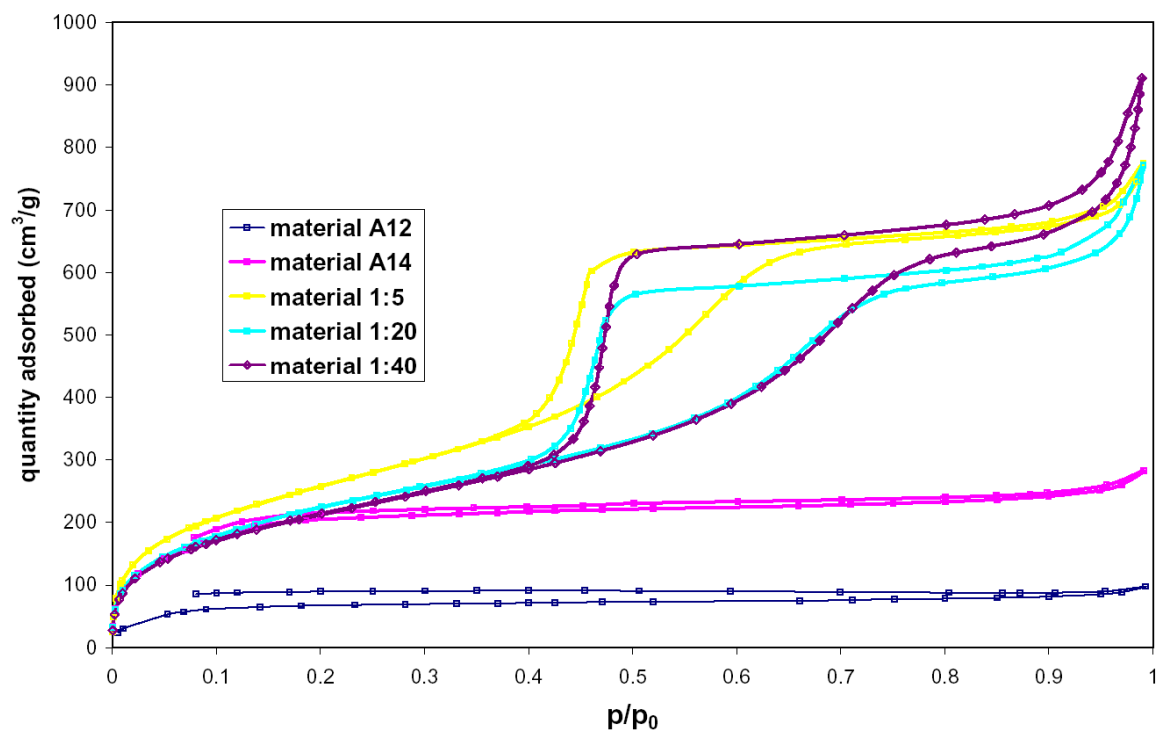


Figure 1: Nitrogen adsorption-desorption isotherms of materials A12, A14, 1/5, 1/20 and 1/40.

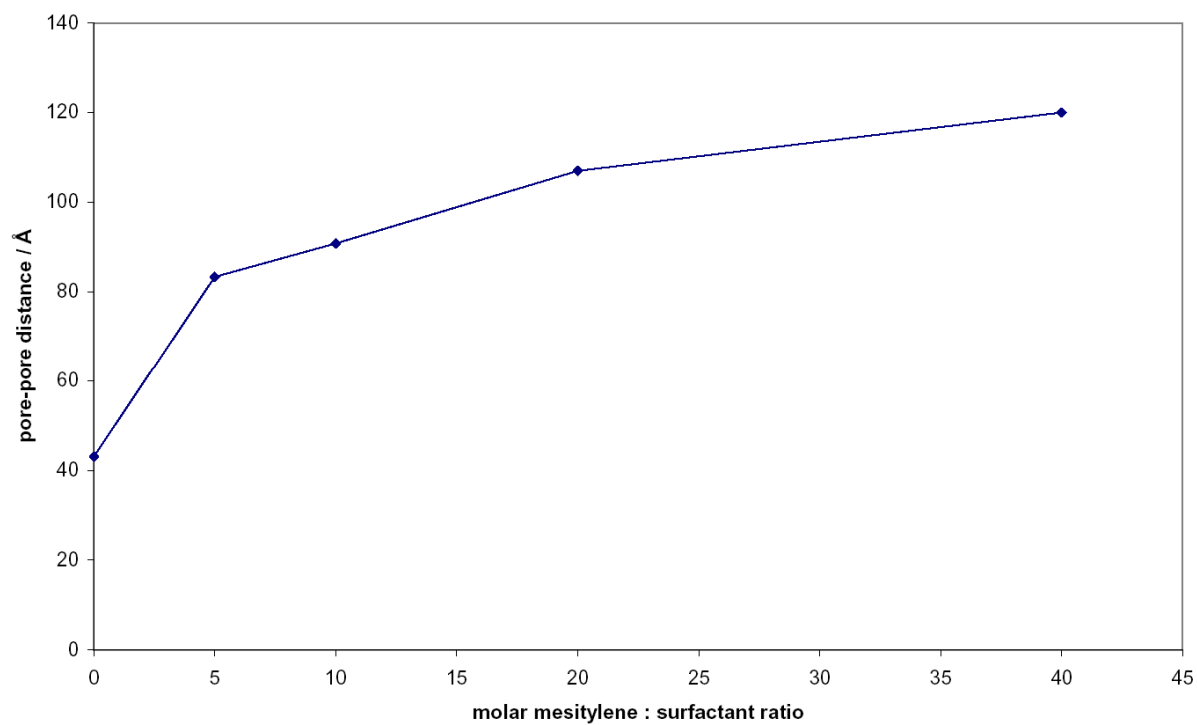


Figure 2: Pore-pore distance in the materials vs. molar mesitylene/precursor 1 ratio in the hydrolysis condensation mixture

Solid state NMR spectra of the materials after use in Henry reactions

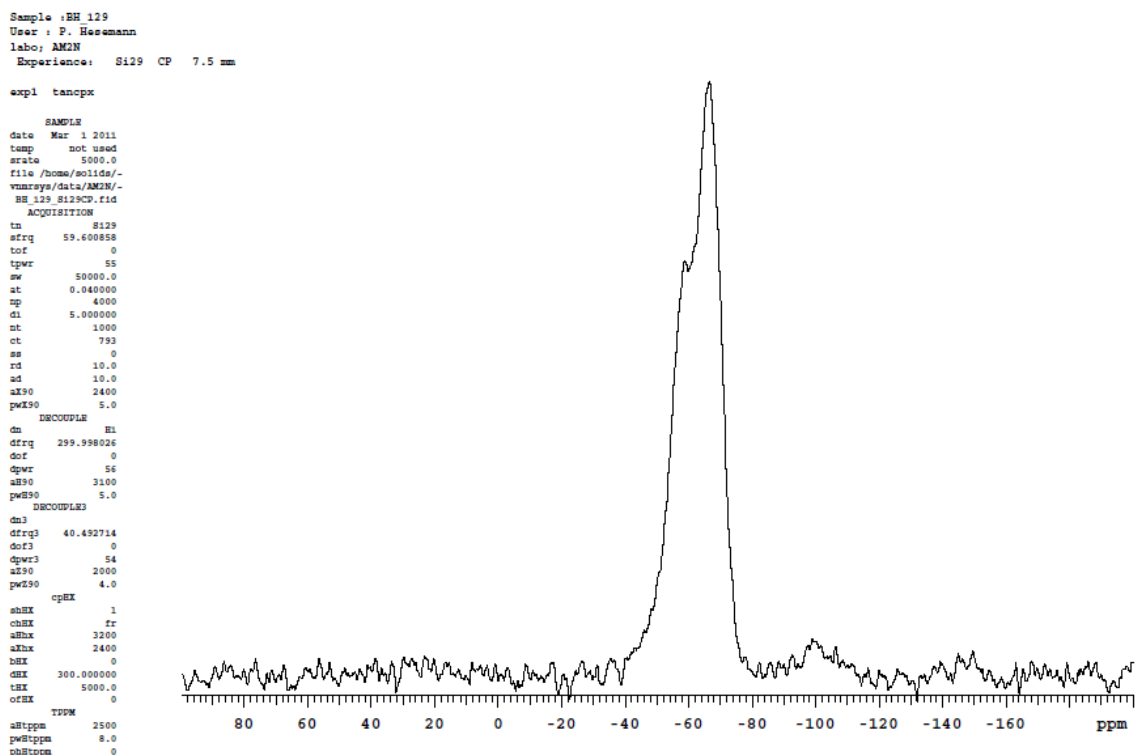


Figure 3: ^{29}Si CP-MAS solid state NMR spectrum of material **A16A18** after 5 successive Henry reaction cycles

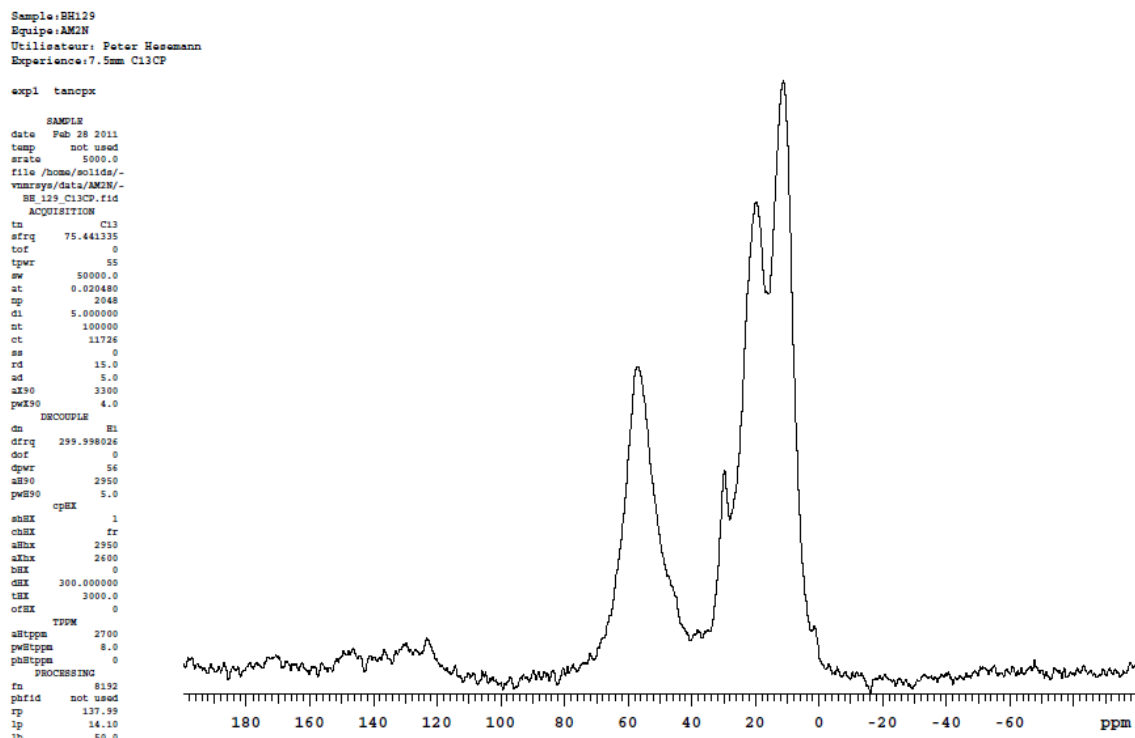


Figure 4: ^{13}C CP-MAS solid state NMR spectrum of material **A16A18** after 5 successive Henry reaction cycles

Solid state NMR spectra of the materials after use in ring opening reaction of glycidol with lauric acid

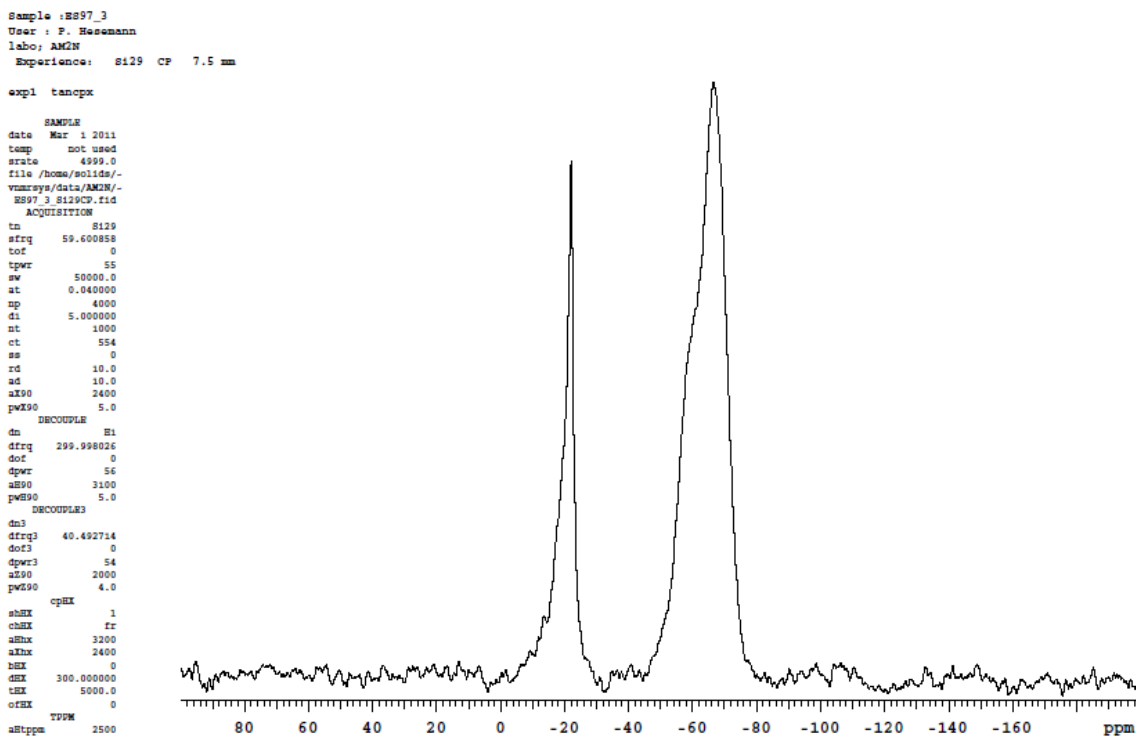


Figure 5: ^{29}Si CP-MAS solid state NMR spectrum of material **A16A18** after 5 successive ring opening reaction cycles.

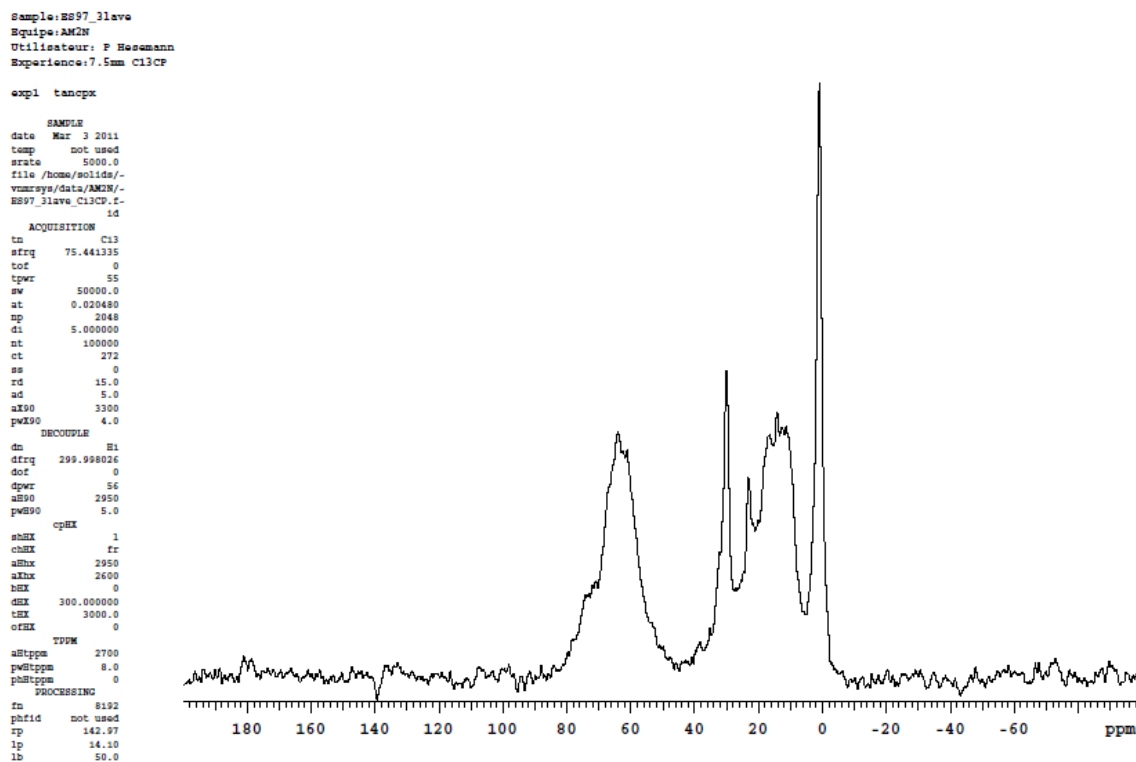


Figure 6: ^{13}C CP-MAS solid state NMR spectrum of material **A16A18** after 5 successive ring opening reaction cycles

Sample : ES97_4
User : P. Hesemann
labo: AM2N
Experience: S129 CP 7.5 mm

exp1 tancpx

SAMPLE

date Mar 1 2011

temp not used

erate 5000.0

file /home/solids/-

vmrays/data/AM2N/-

ES97_4_s129cp.fid

ACQUISITION

tn s129

efrq 59.600858

tof 0

tpwr 55

aw 50000.0

at 0.040000

np 4000

d1 5.000000

nt 1000

ct 1000

ss 0

rd 10.0

ad 10.0

aX90 2400

pwX90 5.0

DECOUPLE

dn H1

dfrq 299.998026

dof 0

dpwr 56

aH90 3100

pwH90 5.0

DECOUPLE3

dn3

dfrq3 40.492714

dof3 0

dpwr3 54

aX90 2000

pwX90 4.0

CPHX

shhx 1

chhx fr

aHhx 3200

aXhx 2400

bxhx 0

dhx 300.000000

thx 5000.0

ofhx 0

TPPM

aHtppm 2500

pwHtppm 8.0

phHtppm 0

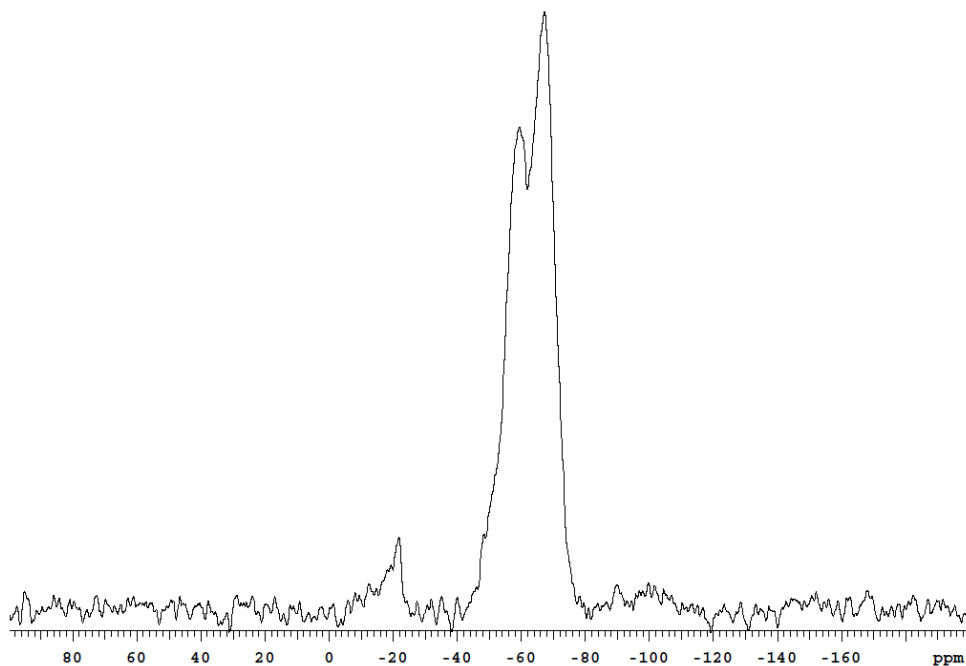


Figure 7: ^{29}Si CP-MAS solid state NMR spectrum of material **A16A18-p** after 5 successive ring opening reaction cycles

Sample: ES97_4lave
Equipe: AM2N
Utilisateur: P Hesemann
Experience: 7.5mm C13CP

exp1 tancpx

SAMPLE

date Mar 3 2011

temp not used

erate 5000.0

file /home/solids/-

vmrays/data/AM2N/-

ES97_4lave_c13cp.f-

id

ACQUISITION

tn C13

efrq 75.441335

tof 0

tpwr 55

aw 50000.0

at 0.020480

np 2048

d1 5.000000

nt 100000

ct 1000

ss 0

rd 15.0

ad 5.0

aX90 3300

pwX90 4.0

DECOUPLE

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dfrq 299.998026

dof 0

dpwr 56

aH90 2950

pwH90 5.0

CPHX

shhx 1

chhx fr

aHhx 2950

aXhx 2600

bxhx 0

dhx 300.000000

thx 3000.0

ofhx 0

TPPM

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pwHtppm 8.0

phHtppm 0

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phfid not used

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lb 50.0

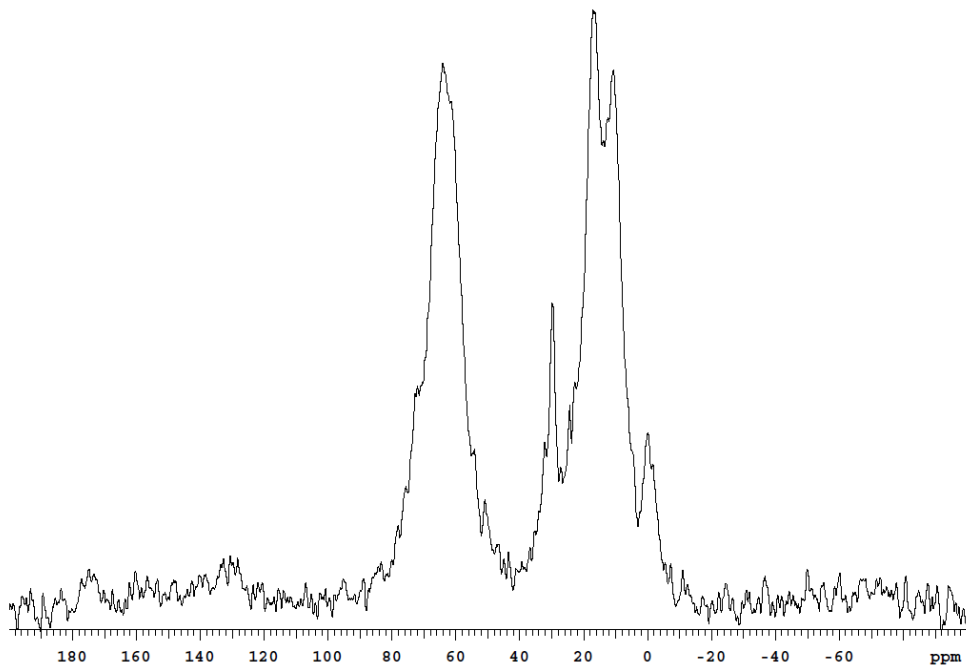


Figure 8: ^{13}C CP-MAS solid state NMR spectrum of material **A16A18-p** after 5 successive ring opening reaction cycles

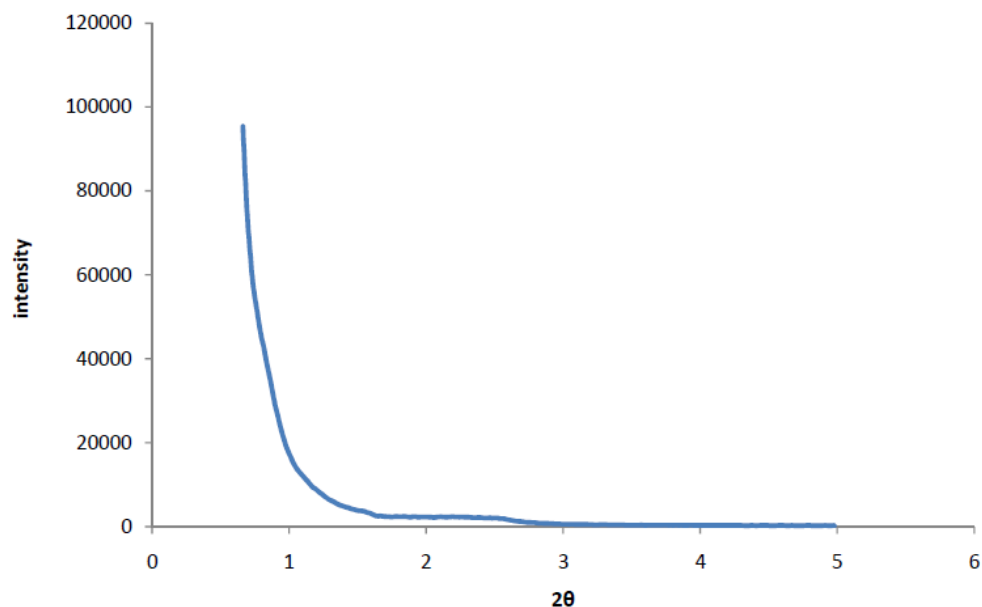


Figure 9: X-ray diffractogram of material **A16A18** after 5 successive ring opening reaction cycles

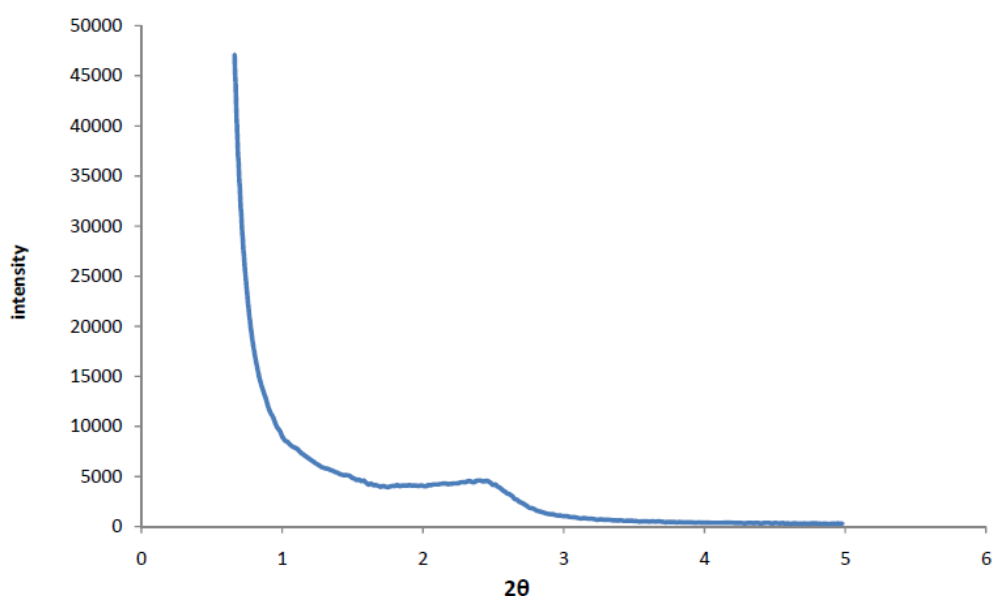


Figure 10: X-ray diffractogram of material **A16A18-p** after 5 successive ring opening reaction cycles

Table 1: Elemental analysis of material **A16A18-p** before and after use in ring opening reaction

	C	H	N
A16A18-p before catalysis	31.06	6.48	3.81
A16A18-p after catalysis	36.26	10.49	2.01

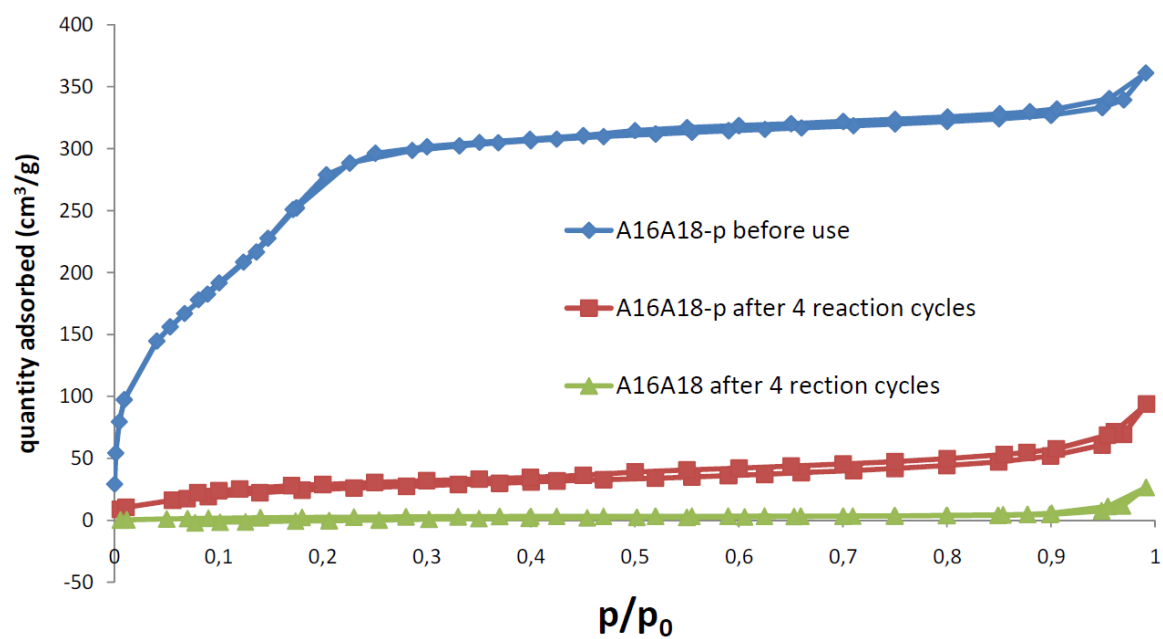


Figure 11: Nitrogen adsorption-desorption isotherms of material **A16A18-p** before and after four reaction cycles in ring opening reaction of glycidol