Mesoporous materials with an acidic framework and basic pores. A successful cohabitation.

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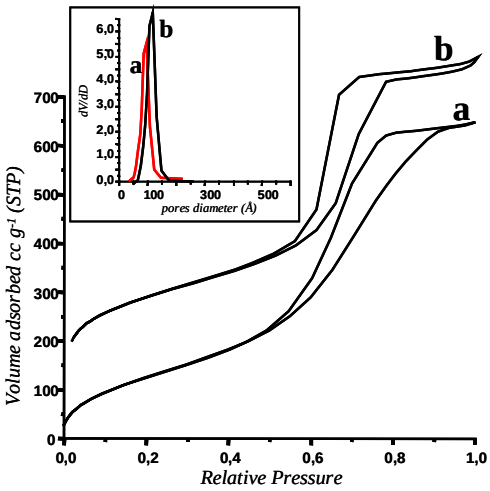
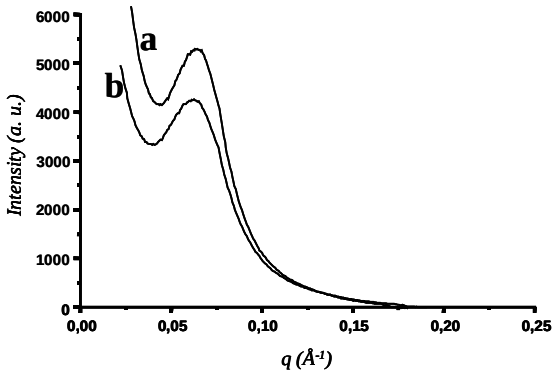
Supporting information

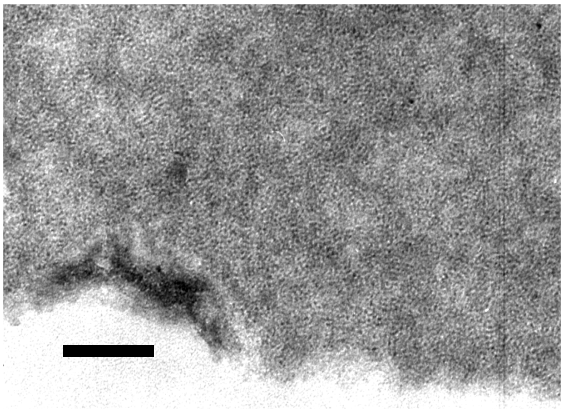
S1. Nitrogen adsorption isotherms of **MS_2-NHBoc** (**a**) and **MSO_3H-NH_2** (**b**). Isotherm of **MSO_3H-NH_2** was shifted about +150 cc g^{-1} for clarity. The inset shows the pores size distributions.



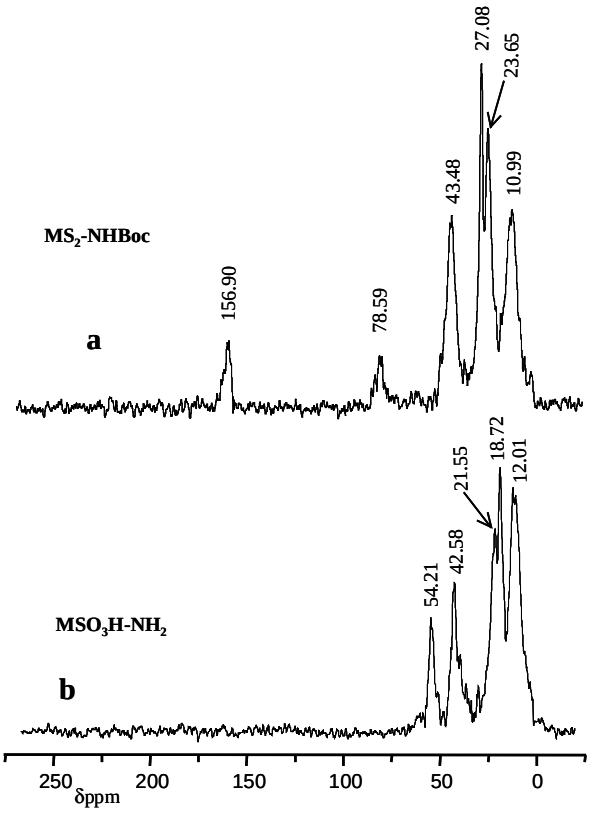
S2. X- Ray Diffraction patterns of **MS_2-NHBoc** (**a**) and **MSO_3H-NH_2** (**b**).



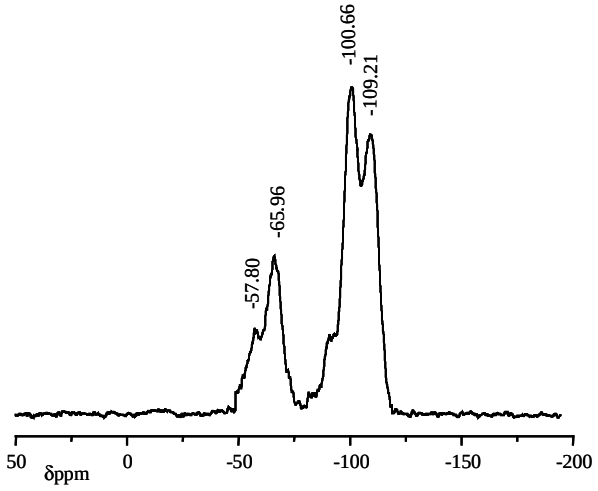
S3. TEM image of **MS_2-NHBoc**. Scale bar : 100 nm.



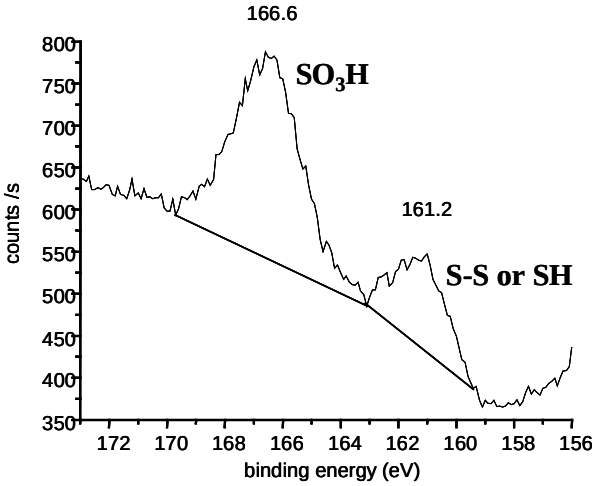
S4. ^{13}C CP-MAS NMR spectra of **MS_2-NHBoc** (**a**) and **MSO_3H-NH_2** (**b**).



S5. ^{29}Si CP-MAS NMR spectrum of **MS$_2$-NHBoc**.

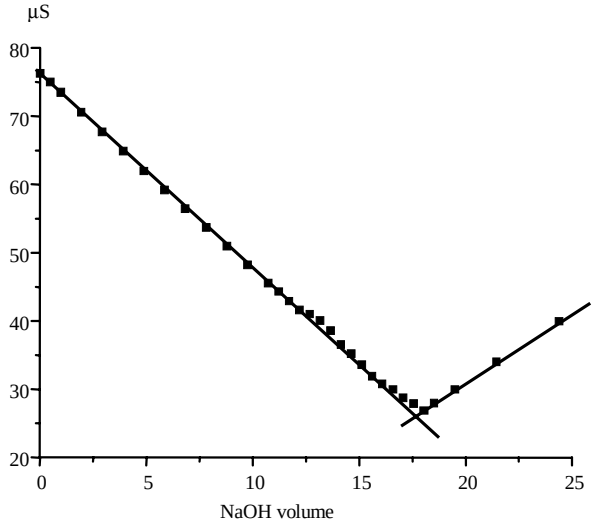


S6. XPS spectrum of **MSO_3H-NHBoc**.



S7. Conductimetric titration of sulfonic acid groups in **MSO_3H-NHBoc**.

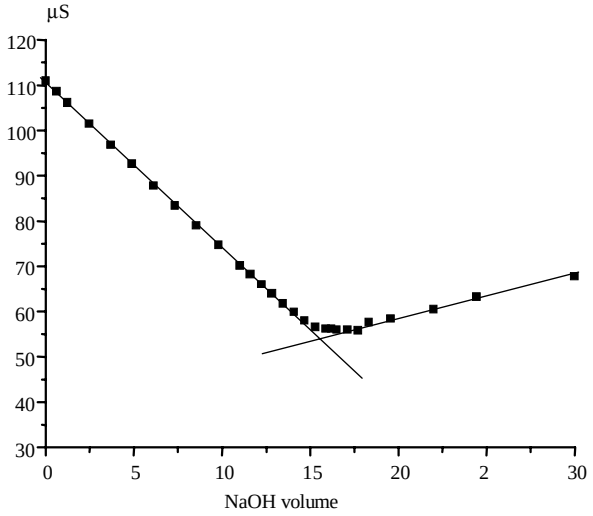
In a typical experiment, 53.0 mg ($1.0.10^{-4}$ mol) of **MSO_3H-NHBoc** was added to 10 mL of Li_2CO_3 solution ($1.00.10^{-2}$ M). After 20 min. of stirring, the mixture was filtrated and the solid was washed with water (4x25 mL). The obtained filtrate was added to an acidic (HCl) solution (15 ml, 0.020 M). The excess of HCl was titrated by a solution of NaOH ($1.0.10^{-2}$ M). This reaction was monitored by conductimetric measurements. (See figure below).



The volume of NaOH solution was found to be 17.8 ml indicating that **MSO_3H-NHBoc** contains 89 % of expected SO_3H groups.

S8. Conductimetric titration of sulfonic acid groups in **MSO_3H-NH_2**.

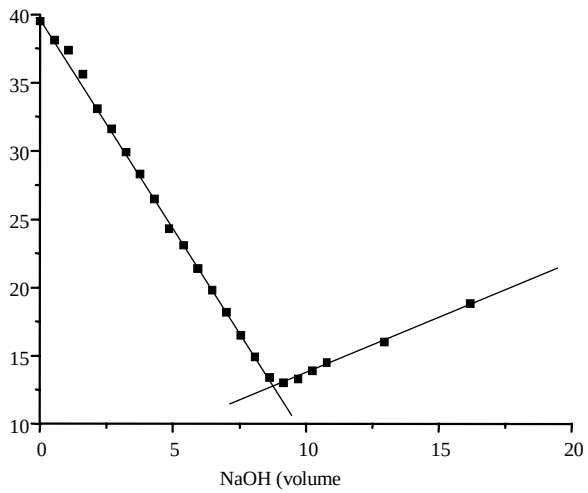
Starting from 50.5 mg ($9.5.10^{-5}$ mol) of **MSO_3H-NH_2**



The volume of NaOH solution was found to be 15.6 mL indicating that **MSO_3H-NH_2** contains 78 % of expected SO_3H groups.

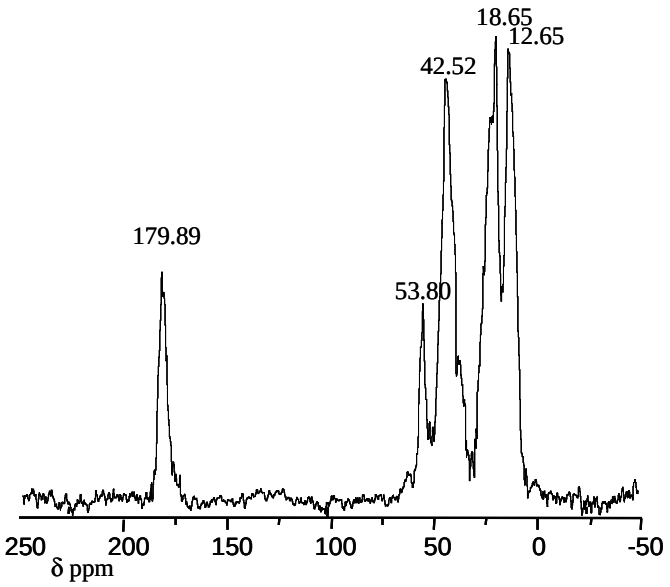
S9. Conductimetric titration of amino groups in **MSO_3H-NH_2**.

In typical experiment, 51.2 mg ($4.8.10^{-5}$ mol) of **MSO_3H-NH_2** was added to 5 mL of HCl solution ($2.0.10^{-2}$ M). After 20 min of stirring at room temperaure, the mixture was filtrated and the solid was washed with water (4x25 mL). The obtained filtrate was titrated by a solution of NaOH ($5.0.10^{-3}$ M). This reaction was monitored by conductimetric measurements. (See figure below).

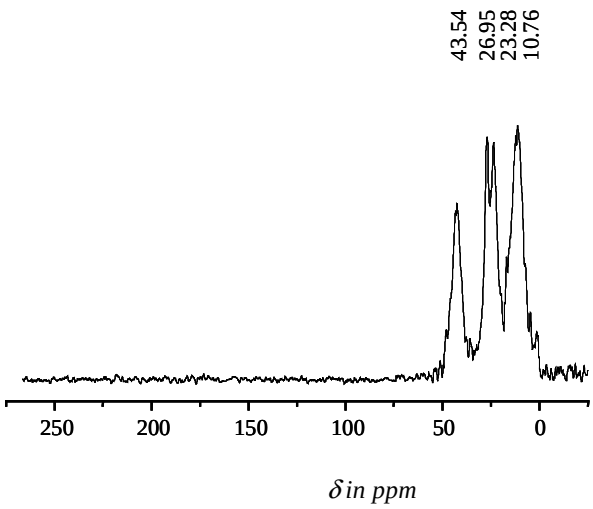


The volume of NaOH solution was found to be 8.75 ml indicating that **MSO_3H-NH_2** contains 88 % of expected NH_2 groups

S10. ^{13}C CP-MAS NMR spectrum of **MSO_3H-NHR**.

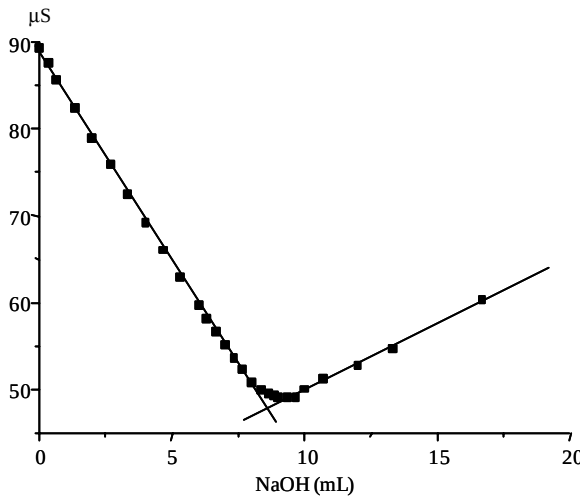


S11. ^{13}C CP-MAS NMR spectrum of **MS_2-NH_2**.



S12. Conductimetric titration of amino groups in **MS_2-NH_2**.

Starting from 52.9 mg ($5.0.10^{-5}$ mol) of **MS_2-NH_2**



The volume of NaOH solution was found to be 8.50 ml indicating that **MS_2-NH_2** contains 92 % of expected NH_2 groups.