Article

Structure-activity relationships between the state of silver on different supports and their I$_2$ and CH$_3$I adsorption properties

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Supporting information

Table S1: Experimental conditions of the ionic exchange reaction for all the prepared silver zeolites materials

Support	V porous (mL/g)	$AgNO_3$ mass (g)
SBA-15	-	-
NH₄/Y (2.5)	0.8	1.96
CeO₂	0.3	5.25
Al₂O₃	0.7	2.25

Table S2: Silver analysis by Atomic Absorption Spectrometry (AAS)

First, a solubilization step was conducted using a concentrated nitric acid solution. A fixed mass of the sorbent was kept in contact with the HNO_3 solution (50 mL, 1.6 mol.L^{-1}) for a duration of 24 hours. Then, 1 mL of solution was recovered using a micro-filtre, and diluted with a dilution factor of 100. Finally, the obtained solution was analysed by AAS, using an air acetylene flame (T_{max} about 2600 K). The related analytical parameters are summarized in the following table :

Element	λ (nm)	Analysis mode	Lamp and parameters	Calibration equation
Ag	338.3	Absorption	AgCuCr *(13170407)*, 75% and 10	$y = 0.07765 \times x - 0.0077$

S3: Determination of cystallites mean size by the Debye-Scherrer formula

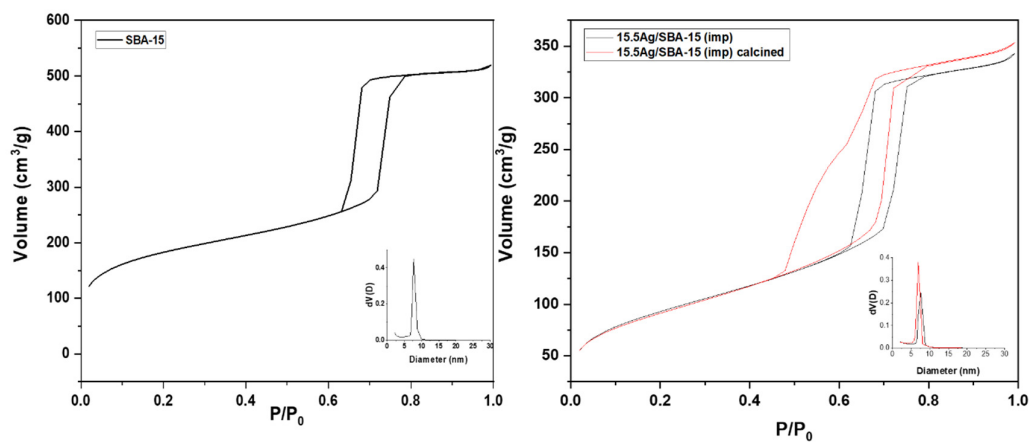In the used formula, the line broadening related to the instrument was taken into account :

$$D = \frac{K \times \lambda}{\cos\theta \times \sqrt{L^2 - L^2_{inst}}}$$

Where :

- D : Cristallites mean size (nm) ;
- K : the dimensionless shape factor (fixed to a value of 0.9 in the present study) ;
- λ : the X-ray Wavelength : 0.15418 nm ;
- θ : the Bragg angle (rad) ;
- L : the full width at half maximum (FWHM) of the pic related to 2θ (rad) ;
- L_{inst} : the instrumental line boradenig (0.07° = for the used device).

Figure S1: Some N₂ adsorption isotherms of the investigated silver loaded sorbents

(A) SBA-15 materials

(B) Ag-Alumina, Ag-Ceria and Ag-Y