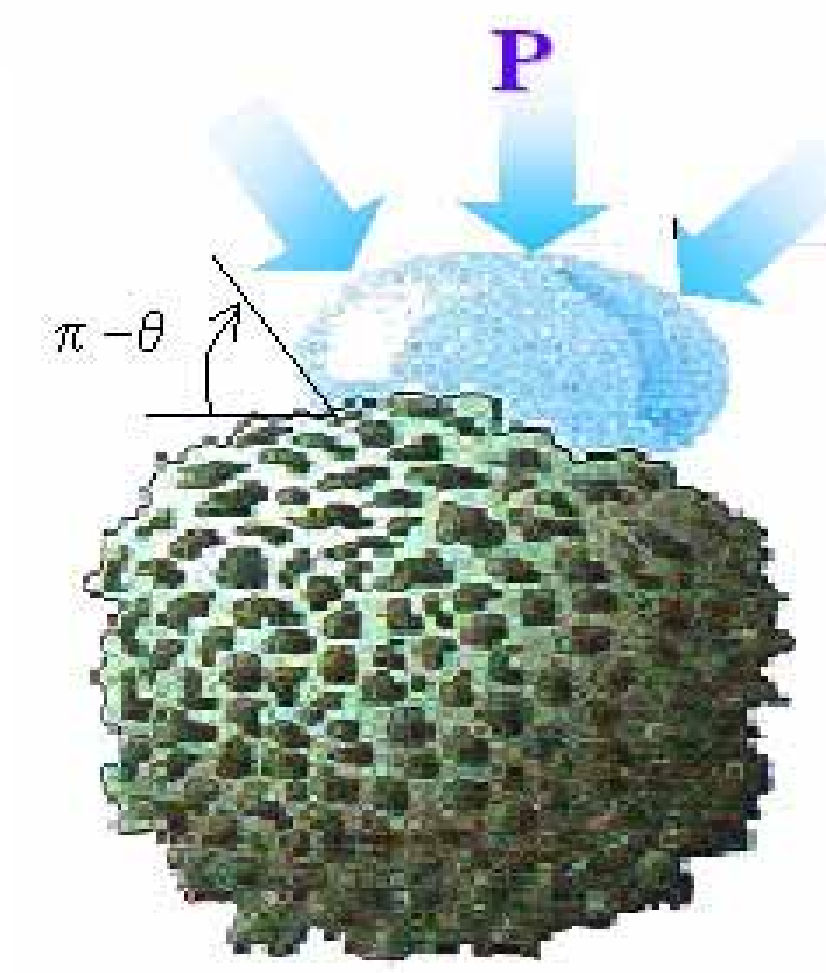
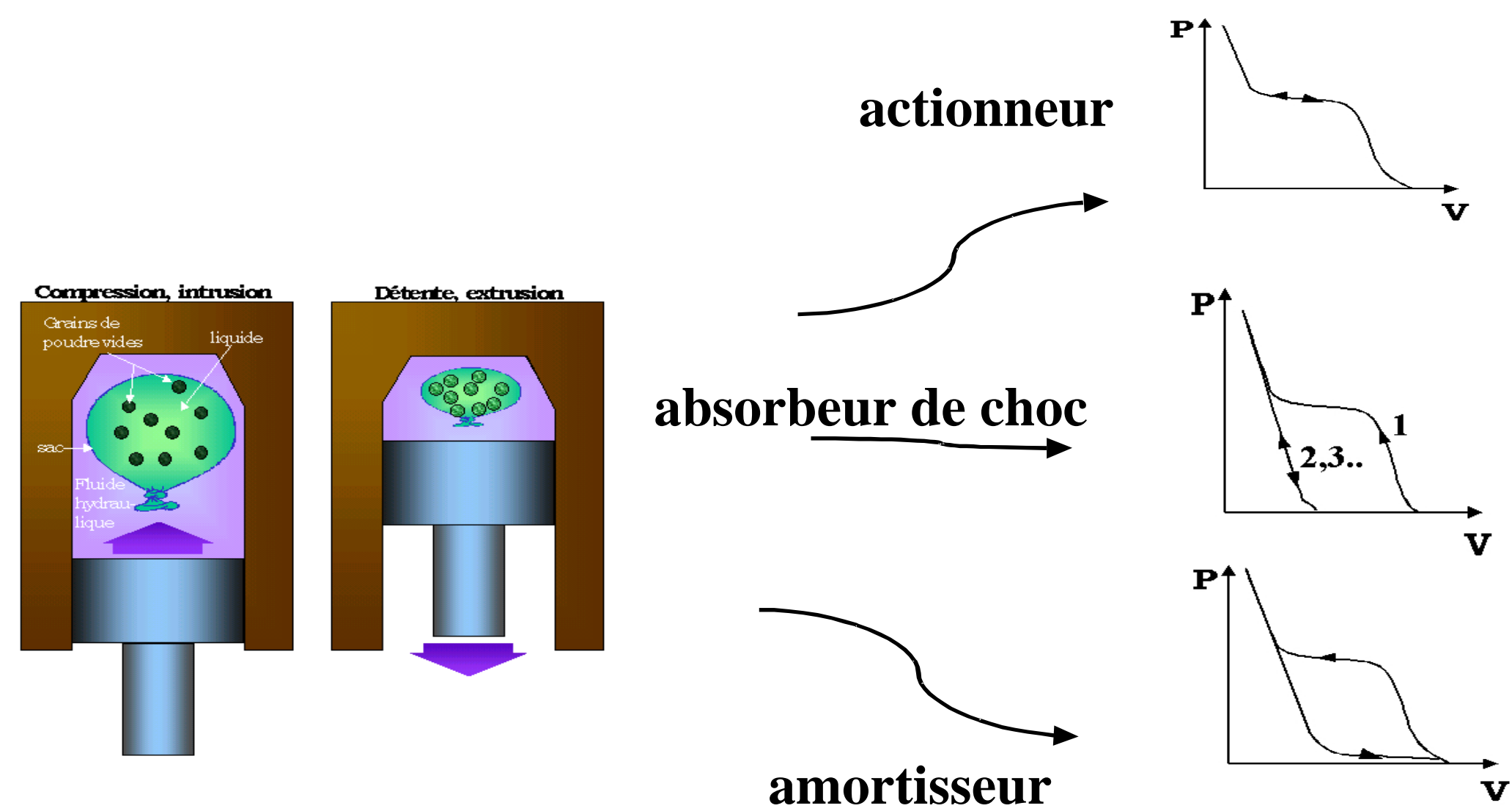


Laboratoire de Thermodynamique des Solutions et des Polymères CNRS UMR 6003 (Clermont-Fd) – J.P.E. GROLIER: Coordinateur
 Laboratoire des Matériaux Inorganiques CNRS UMR 6002 (Clermont-Fd) – J.M. NEDELEC
 Laboratoire d’Énergétique Thermomoléculaire, X-Technologies, (Palaiseau) – V. EROSHENKO
 Laboratoire des Matériaux à Porosité Contrôlée CNRS UMR 7016 (Mulhouse) – M. SOULARD

Objectifs

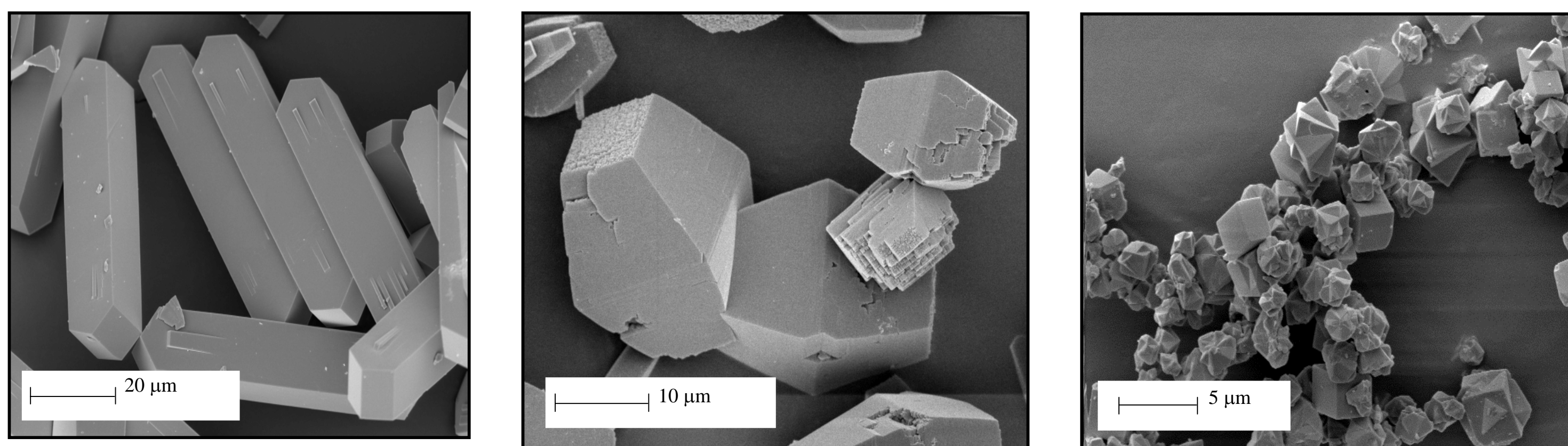
Développement de **Systèmes Hétérogènes Lyophobes (SHL)** = matrice poreuse + liquide non mouillant

Intrusion forcée = stockage ou dissipation de l’énergie mécanique



Elaboration des matrices nanoporeuses hydrophobes

Zéolithes



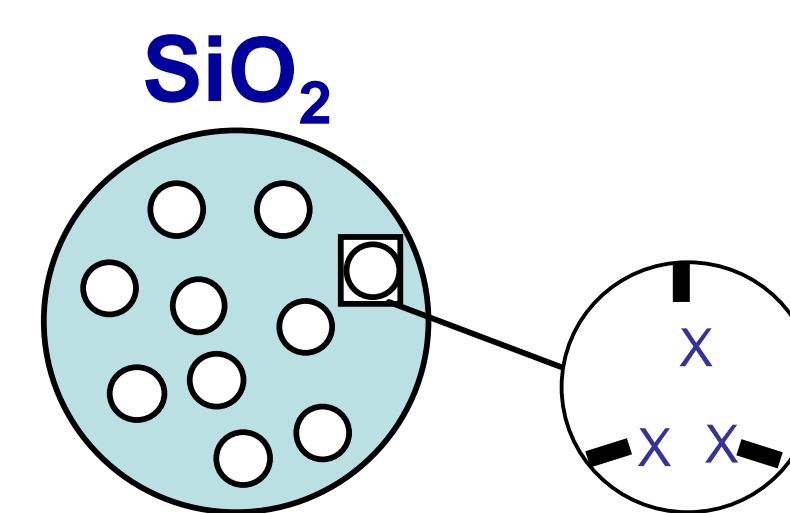
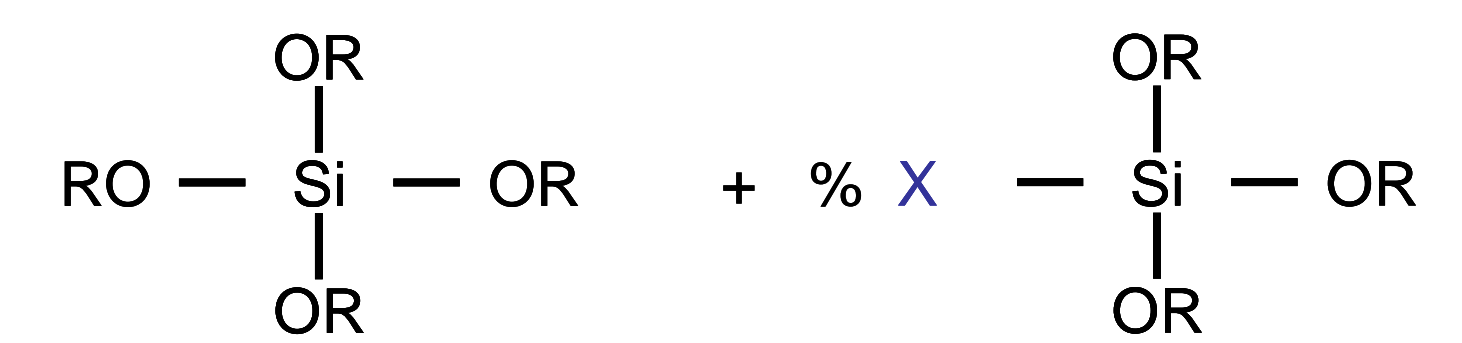
Silicalite-1 (MFI)

Zeolite Si-chabazite (CHA)

Zeolite beta (BEA)

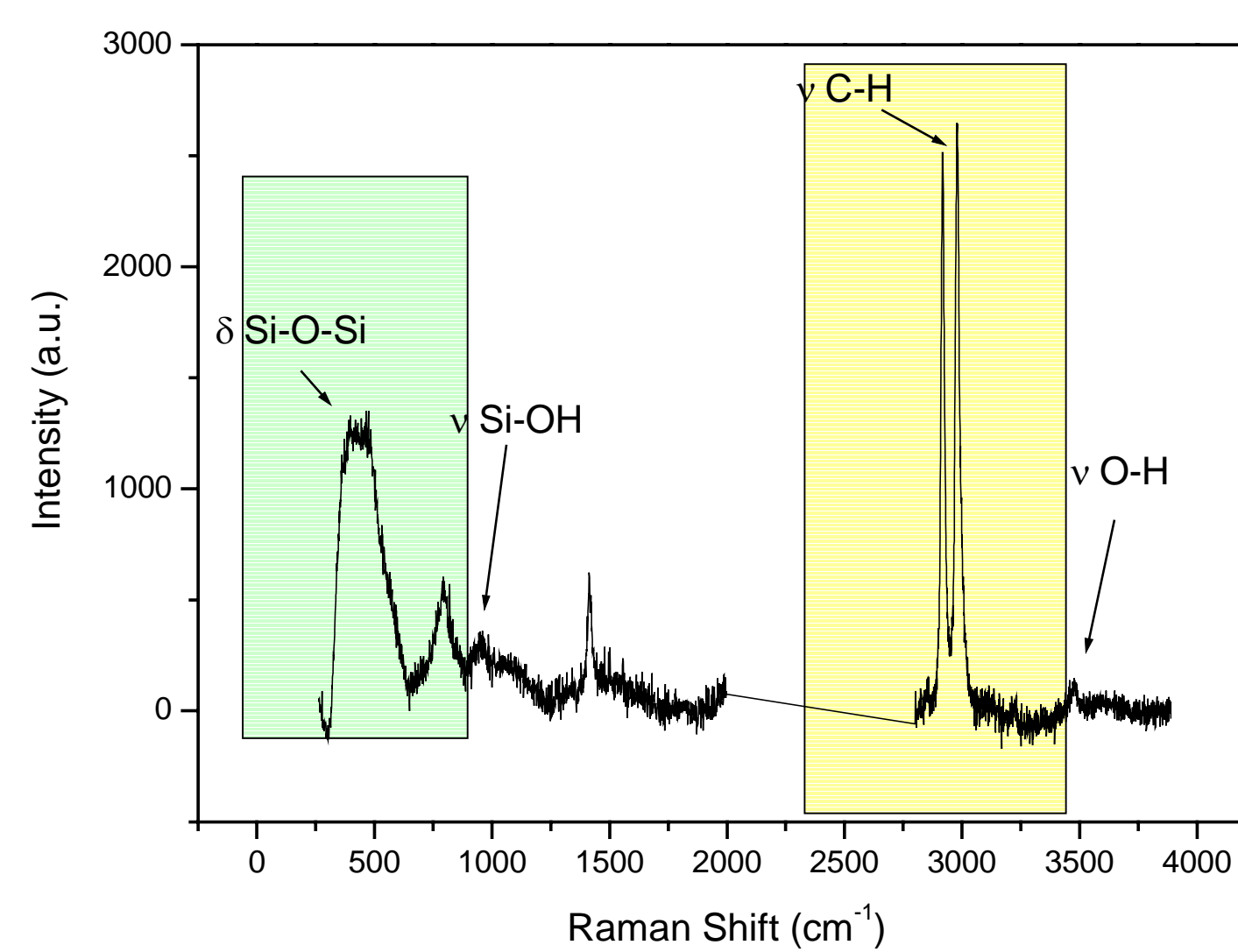
Silices greffées

Sol-Gel

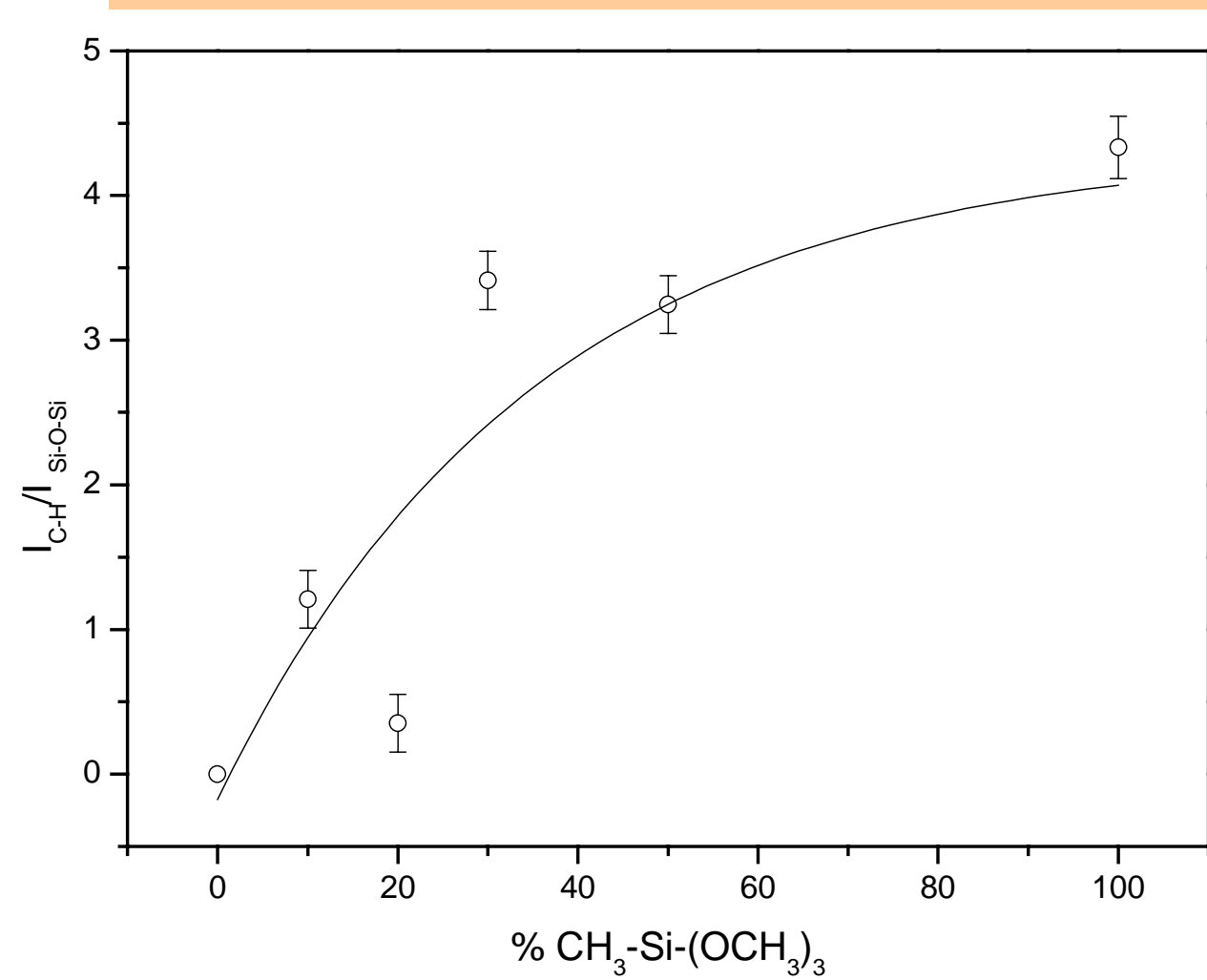


$X = C_1, C_8, C_{18}$

$V_p \sim 0.5 \text{ cm}^3 \cdot \text{g}^{-1}$
 $SSA \sim 800 \text{ m}^2 \cdot \text{g}^{-1}$



Greffage effectif



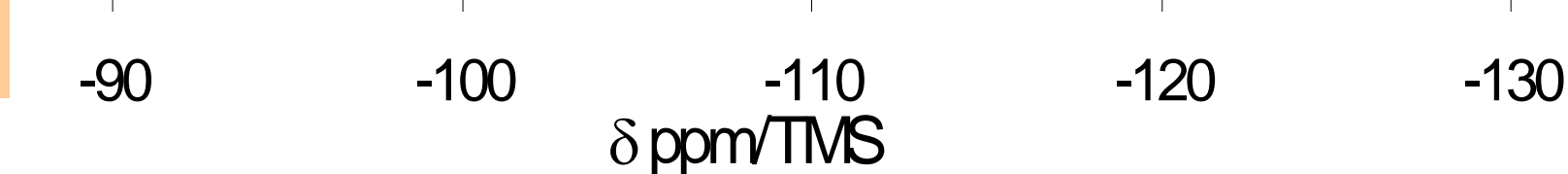
Raman

RMN du solide ²⁹Si

Pas d’espèce Q3

Q4 : Si-[(OSi)₄]

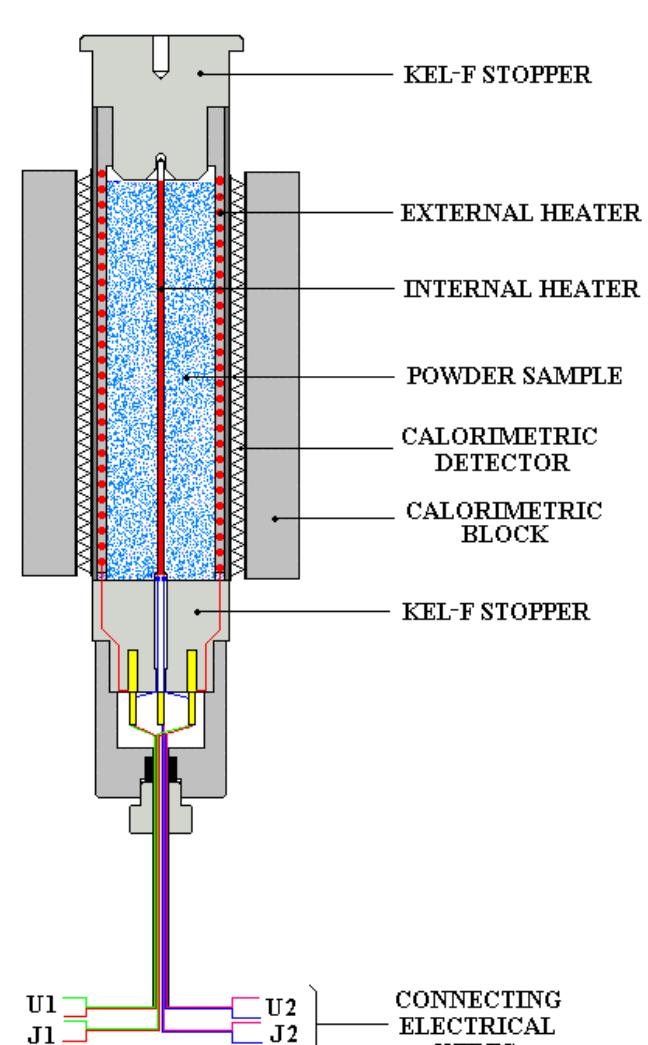
MFI



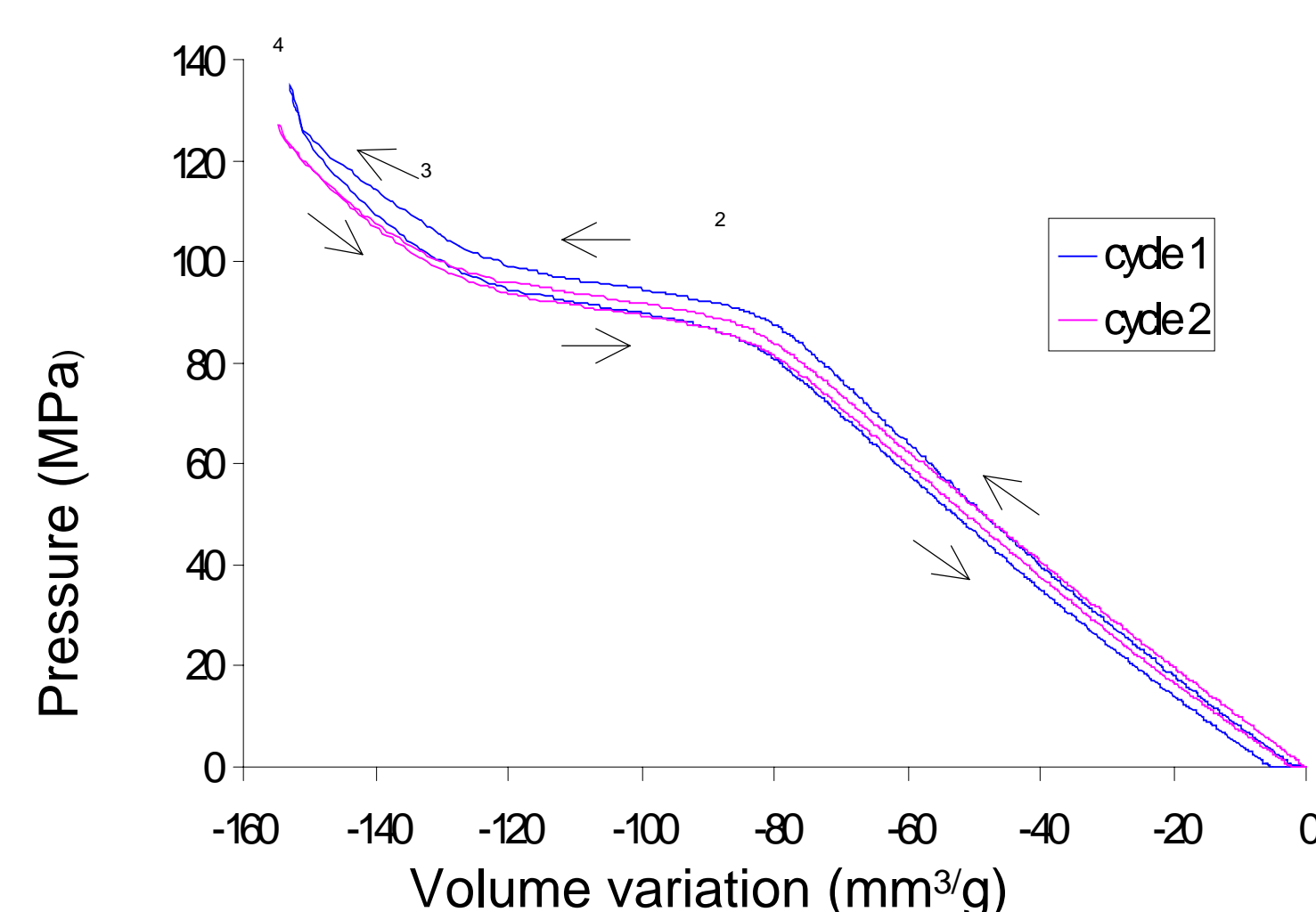
Zéolithes hydrophobes

Mesure de la Conductivité Thermique des poudres

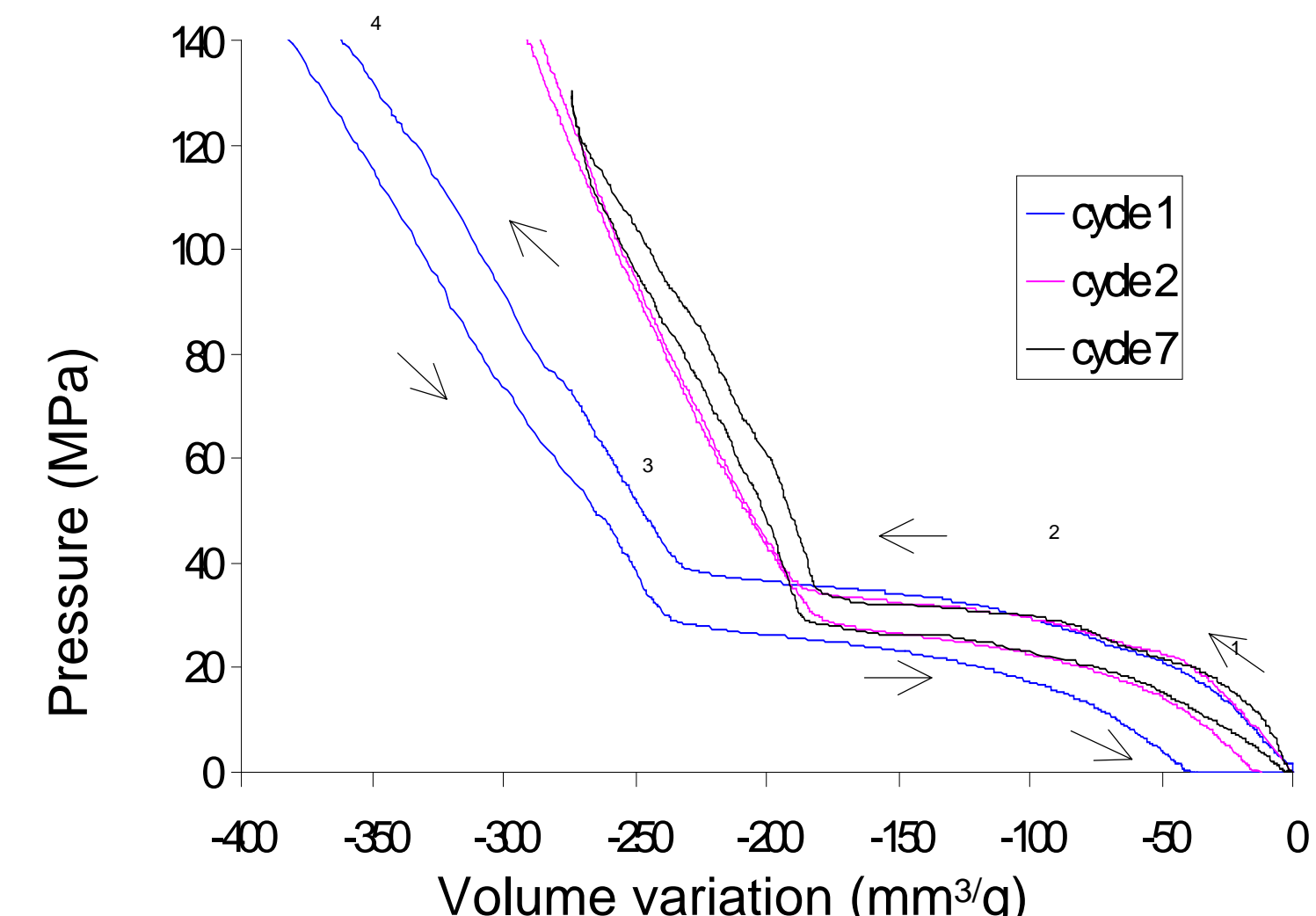
200°C > T > -50 °C
 50 Bars > P > 1 Bar



MFI = ressort moléculaire



BEA = amortisseur



Isothermes d’intrusion d’eau