Sequential Amine-Functionalization Inducing Structural Transition in Aldehyde-Containing Zeolitic Imidazolate Framework: Application to Gas Separation Membranes

Fernando Cacho-Bailo, a Miren Etxeberría-Benavides, b Oğuz Karvan, b Carlos Téllez, a Joaquín Coronas a,*

a Chemical and Environmental Engineering Department and Instituto de Nanociencia de Aragón (INA), Universidad de Zaragoza, 50018 Zaragoza, Spain

b Tecnalia Research and Innovation, Energy and Environmental Division, 20009 Donostia-San Sebastián, Spain

Electronic Supporting Information

Figure S1. TGA curves in the 100-750 °C range in an air atmosphere. The extent of the imine-condensation functionalization reaction was calculated from the residue weight at 750 °C of each of the powdered samples (see Table 2).
Figure S2. XRD spectra of the C9@SIM-1@P84® HF membrane, compared to those of the SIM-1, ZIF-93 and C9@SIM-1@P84® powders.
Figure S3. Scheme of the P84® polymer reaction with an amine, in this case with hexylamine (a). FTIR spectra of the as-made P84® HF and those reacted with hexyl- and nonylamine for 24 h, as a probe. A much higher extent of reaction could be deduced with the water-dissolved C6 than with the ethanol-dissolved C9 (b).