



**SUPPLEMENTARY FIGURE 1.** Diffractograms of air-dried oriented aggregates of the <2  $\mu$ m fraction, for: **(a)** the smectite- and palygorskite-rich fault gouge from Galera Village. And **(b)** the sepiolite-rich gouge from the Rambla de los Pílares sector. Mineral abbreviations for clay minerals according to Bergaya et al. (2006): Kaol = kaolinite, K-Mica = white mica (including illite and muscovite), Sep = sepiolite, Sm = smectite, Pal = palygorskite. Non-clay minerals according to Whitney and Evans (2010): Chl = chlorite, Dol = dolomite, Pg = paragonite, Qz = quartz. The diffractograms were obtained in a PANalytical X'Pert Pro diffractometer (CuK $\alpha$  radiation, 45 kV, 40 mA) equipped with an X'Celerator solid-state linear detector, using a step increment of 0.008 $^{\circ}$  2 $\theta$  and a counting time of 10 s/step (Department of Mineralogy and Petrology, University of Granada).