

Insights on the injection mechanisms inferred from AMS fabrics of sand injectites in a turbiditic system, the exemple of Bevon area of the SE Basin (France).

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We propose to investigate the set up mechanisms of sands injection in the case of dykes injected in host marls of Aptian-Albian age in the Vocontian basin (SE France). Several models have been proposed for a downward injection of the dyke in the Bevons area and we guess that AMS fabric investigations can be used to infer the flow direction. 144 drill cores distributed on 14 sites were sampled, among which 8 sites in the injectites and 6 sites in the host rocks. The studied dykes are generally of a few decimeters thick and are setting up in both in vertical or oblique position with respect to the subhorizontal bedding of the host rocks. There were sampled from one side to the other in order to track the flow direction by identification of imbricated fabric. Magnetic mineralogy, i.e. unblocking temperature inferred from IRM 3 axes demagnetization, indicates that the ferromagnetics s.l. mineralogy is dominated by an assemblage of magnetite (unblocking temperature $T_{ub}=580^{\circ}\text{C}$) and pyrrhotite ($T_{ub}=325^{\circ}\text{C}$). Magnetic susceptibility is low, typical for siliciclastic rocks, ranging from 4×10^{-5} up to 1.7×10^{-4} SI. Degree of magnetic anisotropy is likely representative of AMS measurements in sedimentary rocks with weak values, below than 5 %. In marly host rocks magnetic mineralogy is dominated by pyrrhotite associated with magnetite and both the magnetic susceptibility and degree of anisotropy are slightly lower than for injectites. Regarding magnetic fabric axes distribution, despite some dispersion, the results show that minimum axes of AMS (K3) are parallel to the dyke plane, and maximum axes (K1) are roughly in horizontal position. In marly host rocks, the magnetic fabric is related to tectonic shortening. We interpret that the host rocks have recorded the regional tectonic imprint while the magnetic fabric of the injectites are related to early sedimentary processes. The mechanism of set up proposed to explain the magnetic fabric in the Bevon injectites is a step-by-step process of filling the pre-existing fractures with highly fluidized sand and a compaction direction parallel to dyke plane. A late diagenetic cementation affecting the injectites network prevents any further deformation during tectonic inversion.