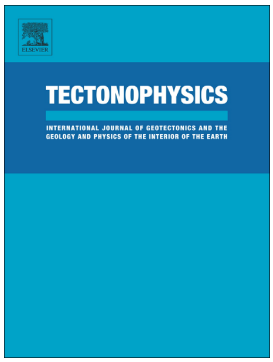

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Strain indicators and magnetic fabric in intraplate fault zones: case study of Daroca thrust, Iberian Chain, Spain

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Abbreviated title: **AMS in intraplate shallow fault zones**

Abstract: Anisotropy of magnetic susceptibility (AMS) has been applied to the study of shallow fault zones, although interpretation of the results requires establishing clear relationships between petrofabric and magnetic features, magnetic behavior of fault rocks, and an extensive knowledge of P-T conditions. In this work, we demonstrate that magnetic methods can be applied to the study of heterogeneous fault zones, provided that a series of requisites are met. A major fault zone within the Iberian plate (Daroca thrust), showing transpressional movements during Cenozoic time was chosen for this purpose, because of the exceptional outcrops of fault gouge and microbreccia and its relevance within the context of the northeastern Iberian Plate. Magnetic fabrics were analysed and the results were compared with foliation and S-C structures measured within the fault zone. Clay mineral assemblages suggest maximum burial depths shallower than 2 km (<60-70°C) for fault rocks in the footwall of the Daroca thrust. The orientation of the AMS axes is consistent with mesostructural strain indicators: k_{min} parallels the mean pole to S, or it is intermediate between S and C poles; k_{max} is oriented at a high angle (nearly orthogonal in overall) to the transport direction, which can be explained from both deformational and mineralogical controls. Both magnetic fabrics and kinematic indicators are consistent with a reverse movement for most of the fault zone.