



Relationship between Magnetic Anisotropy and Syndeformational Remagnetization Inferred from Experimental Study

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Experimental investigations of deformation-induced remagnetization demonstrate that a primary remanence can survive conditions equivalent to moderate metamorphism in certain cases and that pre-deformation magnetic fabric can play an important role in determining the remanence stability. Results from shear experiments at elevated temperatures on magnetite-bearing rock-analogues demonstrate that complex interactions between temperature, applied field, stress, and anisotropy are responsible for determining the robustness of a pre-deformation magnetization. Syndeformational remagnetization is partly attributed to a stress-softening mechanism resulting in a piezoremanent magnetization, but the extent of remagnetization was largely dependent on the initial anisotropy, and generally unrelated to the deformation fabric. Similarly, the initial anisotropy of deformed samples is found to strongly influence the development of deformation fabrics and overprinting causes the deformation geometry to be obscured at low strains. These results raise several questions concerning paleomagnetic study in tectonized terranes and highlight a research area with much potential for future study.