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Potential of high-temperature magnetization measurements for archeo- and paleo-intensity studies

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Three years ago, we constructed a new three-axis vibrating sample magnetometer (Triaxe) allowing the fast (2 hours) acquisition of archeo- and paleo-intensity determinations. Since that time, several hundred samples, principally from French and Mesopotamian archeological artifacts, were analyzed using an automated experimental procedure that involves continuous high-temperature magnetization measurements (Le Goff and Gallet, 2004). Some of these samples were previously analyzed using the classical Thellier and Thellier (1959) method revised by Coe (1967) with stringent selection criteria and corrected for the anisotropy of the thermoremanent magnetization (TRM) and for the cooling rate dependence of TRM acquisition. A detailed comparison is thus possible between the results derived from the two methods. The differences both at the fragment and site levels are mostly within +/-5%, which strengthens the validity of the methodology developed for the Triaxe. We will discuss the potential of this new instrument for archeo- and paleo-intensity studies.