# HALL PROBE SCANNER FOR ANALYSIS OF MAGNETIZATION OF POLISHED SECTIONS

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In classical rock magnetic and paleomagnetic measurements, a dipole source is used to represent the magnetization of individual samples. This dipole is an approximation to the complex magnetic relations within the sample. Taking advantage of modern scanning techniques and a Hall probe, with its sensor within 150 microns of the base plate of the probe, we have investigated the magnetization of sections of basalts and a granulite facies gneiss with a resolution of approximately 250 microns and sensitivities of fractions of a microTesla. The resolution and sensitivity are largely determined by how close the sensor can be brought to the sample, which in our case is approximately 250 microns. This is not as good as the Ultra High resolution Scanning SQUID Microscope (Kirschvink, 2006), but it is sufficient to determine internal magnetic structure in polished sections. The method has the advantage of being very convenient and easy to run. Hawaiian basalts and a granulite were studied throughout AF demagnetization of Natural Remanent Magnetization (NRM), acquisition of Isothermal Remanent Magnetization (IRM), and AF demagnetization of saturation IRM. Among the observations made were the acquisition of very soft IRM and AF demagnetization of single large particles of magnetite, edge effects of the magnetization of the groundmass around large plagioclase crystals, and an apparent dominance of magnetic anomalies with dimensions of ~ 1mm, which is well above the resolution of the instrument. We can also make numerous estimates of the paleofield intensity from IRMs normalization.

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