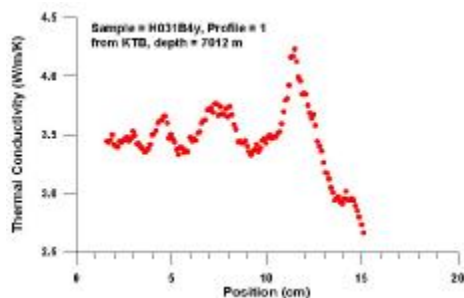




High resolution measurements of thermal conductivity

This high precision method using optical scanning was developed by **Prof. Dr. Yuri Popov** (Moscow State Geological Prospecting Academy) and is new in both Earth science and thermal physics. It is based on scanning a sample surface with a focused, mobile and continuously operated heat source in combination with infrared temperature sensors.

- Measurement range = 0.2 to 25 W·m⁻¹·K⁻¹
- Accuracy = 3 %
- Productivity = up to 60 samples per hour (depending on sample length)
- Sample dimensions = at least 4 cm length with any given shape.
Maximum length of scanning line appr. 500 mm
- Sample preparation = no polishing or sawing necessary,
flat and cylindrical surfaces, e.g. drill cores
- Control = Notebook with Windows 2000/NT (TM), steering software with online help
functions and intuitive user interface.



The results are:

- profiles of thermal conductivity along the samples,
- inhomogeneity of thermal conductivity,
- anisotropy: components of the thermal conductivity tensor for anisotropic solids.

Reference: Popov Y.A., Pribnow D.F.C., Sass J.H., Williams C.F. & Burkhardt H. (1999): Characterization of rock thermal conductivity by high-resolution optical scanning. *Geothermics* **28**, 253-276.

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