

Details of CARE Facility

Name of CARE facility: Drill Core Scanner

Location: Engineering Geosciences Laboratory (WLE 202)

Total cost of equipment/facility: 35,500 USD (Rs. 16.00 lakhs)

Year of CARE funding: 2003-04 and Operational since, March, 2004

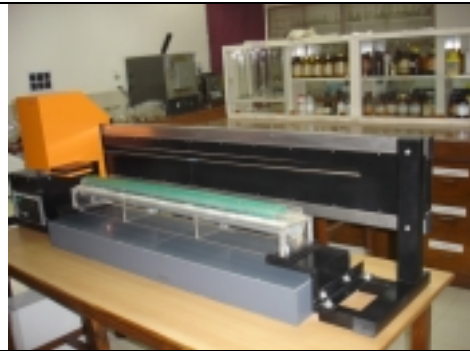
Support provided by CARE: 11 Lakhs (remaining support from MHRD Project)

Name of Principal Investigator: Rajiv Sinha (rsinha@iitk.ac.in; Tel: 7317)

Participating departments: None

Brief description and capability of CARE facility:

The Drill Core Scanner DCS-1 provides continuous precise measurements on drill cores or other soil and rock samples placed in plastic measuring trays. Magnetic susceptibility and dose rate of gamma-ray are measured simultaneously in 1 cm steps along 1 m long samples. After continuous scanning the spectral measurement with consequent analysis of K, U, Th concentrations on chosen parts of samples is available.



Technical Specifications:

Gamma-ray unit

Detector: NaI(Tl) 3"x3" with shielded photomultiplier

Energy resolution: 8.5% for ^{137}Cs (0.662 MeV)

Energy range : Upto 3 MeV

Reference source: ^{137}Cs , activity 16 kBq

Pulse shaping : Semi-Gaussian, 1 μs

Analyzer: 512 channels, up to 70.000 pulses per second

PC interface: RS 232C

Power supply: 230V / 50 Hz

Dimensions: 180 x 60 x 62 cm (length, width, height)

Weight: 118 kg

Susceptibility unit

Detector: air-cored coil

Sensitivity: 1×10^{-5} SI units

Measuring range: 0 to 99999 $\times 10^{-5}$ SI units

Operating frequency: 10 kHz

Major applications of the facility:

- Analysis of sediment cores for magnetic susceptibility and natural gamma ray activity
- Measurement of radioactivity in rock samples
- Useful for the industry related to iron exploration