THERMOLUMINESCENCE DATING OF MARINE ARCHAEOLOGICAL FINDINGS IN THE GULF OF CAMBAY, INDIA.

R.K. GARTIA, TH. BASANTA SINGH and **S. NABADWIP SINGH**
Luminescence Dating Laboratory[*], Manipur University, Imphal- 7950 03, **INDIA**

S. KATHIROLI, S. BADRINARAYANAN, B. SASISEKARAN, D.V. RAO and **RAMESH**
National Institute of Ocean Technology, Chennai – 600 038**, INDIA**

ABSTRACT

Thermoluminescence (TL) dating is applied routinely to determine the ages of heated objects such as pottery, hearth materials and volcanic tephras. Taking advantage of this sensitive physical-based dating technique some samples of brick pieces, pottery pieces and burnt hearth materials of Gulf of Cambay, India, recovered from a depth of about 20 mts have been dated using the standard commercial Risø (Denmark) TL/OSL reader (model TL DA-15A).

Using fine-grain technique the estimated equivalent doses of three such samples are found to be 38.88 ± 0.04, 31.58 ± 0.20 and 25.96 ± 0.06 Gy. These equivalent doses of the objects show that these samples were fired / manufactured around 6,300, 4,800 and 3,600 BC.

These dates correspond to pre-Harrappan and early Harrappan Culture. TL dates of Pre-historic bricks of Vigakot (well known as a prosperous ancient fort in the northwestern region of Kachchh, Gujarat) carried out at the Luminescence Dating Laboratory, Manipur University, Imphal are found to be as old as 3,200 BC, which are found to be younger compared to the lower limit of age of the ancient civilisation that flourished in the Gulf of Cambay as early as 6,000 BC. Such ancient settlement in Gujarat coast is not unrealistic if one keeps in mind the fact that the antecedents of the Indian civilisation go back at least to 7,000 BC in the remains that have been found at Mehrgarh.

Finally this work also shows that the ancient coastal line in Gujarat coast was much inside the present sea. Thus we are in the middle of an exciting phase of TL dating revolution providing the much needed chronology of one of the world's earliest civilisations. We expect to throw more light in terms of submergence of the civilization by dating the Paleo-Channels already discovered by the group at NIOT.

---

[*] A DST New Delhi supported laboratory funded for joint activity of Department of Physics and Earth Sciences