

## Geochemistry, Provenance, Compositional Maturity of Mastani Lake Sediments, India

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### Abstract

The major and trace element geochemistry of the Mastani Lake sediments from the Diveghat area of Pune, India has been carried out to understand the provenance, compositional maturity and source area weathering conditions. The major oxides viz., TiO<sub>2</sub>, Fe<sub>2</sub>O<sub>3</sub>, MgO and K<sub>2</sub>O shows strong positive correlation, when plotted against Al<sub>2</sub>O<sub>3</sub>, suggest the dominance of clay minerals in sediments. Low values of SiO<sub>2</sub>/Al<sub>2</sub>O<sub>3</sub> and K<sub>2</sub>O/Na<sub>2</sub>O ratios indicate the presence of clay and the compositional immaturity of the lake sediments. The values of CIA, CIW, ICV and PIA of the sediments infer moderate to slightly high weathering conditions. The ratio (Al<sub>2</sub>O<sub>3</sub>+K<sub>2</sub>O+Na<sub>2</sub>O)/SiO<sub>2</sub> indicate semi-arid climatic conditions. The discriminate function diagram, A-CN-K plot, Al<sub>2</sub>O<sub>3</sub>/TiO<sub>2</sub> and TiO<sub>2</sub>/Ni ratios of the lake sediments suggest continental crustal provenance dominated by mafic igneous rocks.

**Keywords:** Mastani Lake sediments, Provenance, Compositional maturity, Weathering, Pune, India.