

Bakry, A.

Spectroscopic analysis of marble samples using laser induced breakdown spectroscopy

(2007) *Asian Journal of Spectroscopy*, 11 (1), pp. 51-59.

Physics Department, King Abdul Aziz University, P.O. Box 80203, Jeddah 21589, Saudi Arabia

Abstract

Laser induced Breakdown Spectroscopy (LIBS) technique has been applied for spectroscopic analysis of marble samples collected from marble factory located at industrial city of Jeddah, Saudi-Arabia. Trace metals such as magnesium, chromium, calcium, titanium, iron, sulfur, carbon, sodium and tungsten were detected in these samples. This method is based on the study of spectroscopic analysis of plasma resulting from interaction of intense laser radiation with sample medium. Atomic emission spectra of different trace metals present in the marble samples have been recorded in the 200 -620 nm region. The observed spectral lines have been assigned to transitions in the neutral charge state and first ionized states of the corresponding atoms of the material under investigation. Prior to quantitative determination of the elemental concentration, the LIBS system was calibrated for these metals.

Author Keywords

Cleaning of paints; Continuous emissions monitoring; Laser-induced break down spectroscopy (LIBS); LIBS applications; Marble industry effluents; Restoration of monuments; Trace metals detection

Document Type: Article