

Laser Ablation Inductively Coupled Plasma Mass Spectrometry: Instrumental Procedure Development and Analysis of Egyptian Magmatic Ilmenite Ore

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Laser Ablation Inductively Coupled Plasma Mass Spectrometry (LA-ICP-MS) is an analytical technique used to determine precise elemental composition profiles for solid state materials. Maurice et al. have proposed that the Abu Ghalaga Ilmenite Deposit represents late magmatic melt. Major and trace elemental profiles of different ilmenite ores and rare-earth element profiling of minerals in the surrounding rock using LA-ICP-MS are used to construct evidence for the origin of this titanium-iron oxide ore deposit. Electron microprobe analysis, scanning electron microscopy, and whole-rock analysis were used to produce data and images of the mineralogical profiles of the samples prior to LA-ICP-MS. We present novel methodology for precise elemental profiling in minerals containing little or no silicon or calcium, elements normally used as an internal standard in LA-ICP-MS analysis.