

Calibrating the ChemCam LIBS for carbonate minerals on Mars

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Abstract

The ChemCam instrument suite on board the NASA Mars Science Laboratory (MSL) rover includes the first LIBS instrument for extraterrestrial applications. Here we examine carbonate minerals in a simulated martian environment using the LIBS technique in order to better understand the in situ signature of these materials on Mars. Both chemical composition and rock type are determined using multivariate analysis (MVA) techniques. Composition is confirmed using scanning electron microscopy (SEM) techniques. Our initial results suggest that ChemCam can recognize and differentiate between carbonate materials on Mars.

OCIS Codes

300.6365 Spectroscopy, laser induced breakdown

350.6090 Space optics

120.0280 Remote sensing and sensors