Spectral and mineralogical characterization of clay minerals: data from the Master's Degree Program in Earth Sciences and Environmental Modelling of the State University of Feira de Santana (PPGM-UEFS), Bahia, Brazil.

Joselisa M. Chaves, Filipe R. Mello, Suzana M. O. Brito, Washington J.S.F. Rocha

Universidade Estadual de Feira de Santana - UEFS
Programa de Pós-graduação em Modelagem em Ciências da Terra e do Ambiente – PPGM, Caixa Postal 44036-200 – Feira de Santana - BA, Brasil
(joselisa@uefs.br, lipegeografo@gmail.com, smobrito@gmail.com,wrocha@uefs.br)

Abstract

There is still little research being done on clay minerals in the semi-arid region of the State of Bahia (Brazil) from the point of view of spectroradiometry. That method, in opposition to conventional methods, allows for accurately obtaining the constituent elements of minerals – especially those of the clay minerals – since it captures the images emitted by the elements and thus offers more adequate answers concerning their chemical as well as their mineralogical composition. From the spectral signatures it is possible to identify each and every element and thus – through the analysis of the specters – also to identify and characterize clay minerals among other classes of minerals. The spectroradiometry technique used to analyze the samples was executed in the wavelengths range from 0.4 to 2.4 μm. No previous treatment of the material was necessary since the technique was applied directly over the surfaces of its powdered samples. In that spectral range the interaction between the radiation and the analyzed material yields individual specters which can be compared with standard specters for the mineralogy of the material studied. The objective of this work is to present the characterization of the classes of clay minerals of Feira de Santana and Chapada Diamantina regions, State of Bahia, thus contributing to the formation of a spectral library. The methodology used in the work consisted of three steps: i) collection and preparation of the samples; ii) obtainment of the specters through the use of the spectroradiometer FieldSpec Pro FR; iii) treatment of the specters (removal of the continuum and empirical analysis of the spectral data). The results of the research yielded the characterization of five samples which constitutes now the spectral library of the Laboratory of Spectroradiometry of the Master's Degree Program in Earth Sciences and Environmental Modelling of the State University of Feira de Santana (PPGM-UEFS).