Mapping of volcanogenic massive sulphide (VMS) deposits of using satellite data

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Volcanogenic Massive Sulphide (VMS) deposits are typical Cyprus-type and occur in the Oman Ophiolite as clusters of pyritic copper-rich mounds with gold bearing gossans. The occurrence of deposits is abundant in Sohar–Shinas region of East Al-Batina coast region of the Sultanate of Oman. This work describes the spectral absorption characters of the minerals of the deposits and demonstrates the methods to map the deposit. The spectral absorption character of minerals namely epidote, chlorite, pyrophyllite, illite, calcite, dolomite, pyrite, siderite and hematite are studied and the image processing methods namely band ratios, principal component analysis (PCA), spectral angle mapper, linear spectral unmixing (LSU) and spectral feature fitting (SFF) were applied to map and discriminate the minerals and rocks of the deposits using Landsat 8 and ASTER data. The results of study evaluated in the field to show the sensor capability potential of the image processing methods.

Biography

Sankaran Rajendran received the PhD degree in Geology from the Bharathidasan University, India, in 1996. From 2002 to 2010, he was an Assistant Professor with the Department of Earth Sciences, Annamalai University, India. Currently, he is working in the Department of Earth Sciences, Sultan Qaboos University, Oman. His research interests involve mapping mineral and environmental resources of earth using remote sensing and GIS techniques.

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