Estimation of iron and manganese carbonate values in dolomites using X-ray diffraction method

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Abstract: The aim of this research was to estimate iron and manganese carbonate values in dolomites using XRD technique. This method is done easily and with less cost than the conventional chemical methods which are used to determine the amount of iron and manganese. For this purpose, total number of 20 samples from four different formations with various ages and locations, including Soltanieh, Sibzar, Shotori and Mozduran Formations, were selected and their iron and manganese contents were measured using atomic absorption spectrophotometry technique. Then all samples were analyzed by XRD. Finally, with drawn cell space values versus amounts of iron and manganese, the graph was obtained and the function of mol\% FeCO₃ + MnCO₃ = 1271.5 \( d_{104} - 3667.2 \) (\( r^2 = 0.897 \)) was obtained from it. This function can be used to estimate iron and manganese carbonate contents in the other unknown dolomite samples which have only been studied using XRD method.

Keywords: XRD; dolomite; ferroan dolomite; manganese dolomite.