Raman microspectroscopy characterization of graphite from "Terra Negra and Ferreiros" mine (NW Portugal)

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Introduction

The aim of this study is to estimate via Raman microspectroscopy the structural ordering of the graphitic material from "Terra Negra and Ferreiros" mine, which is inserted into a narrow NW-SE strip of Silurian graphitic schists of Central Iberian Zone.

Raman microspectroscopy analyses were performed on two rock samples via a Horiba Labram Dilor-Jobin Yvon spectrometer attached to an Olympus microscope and an excitation of 633 nm lines of a He-Ne laser, five Raman spectra were recorded and Raman parameters calculated for each sample.

The results obtained on both samples reveal that the first-order Raman spectrum exhibit a graphite G band at around 1580 cm^{-1} with a FWHM between 23 and 26 cm^{-1} and defect bands D2 around 1615 cm^{-1} and D around 1330 cm^{-1} with FWHM between 43 and 49 cm^{-1}. For the second order spectrum a S1 symmetric band appear near 2700 cm^{-1} (Fig. 1). These results are an indication of disordered graphitic material.

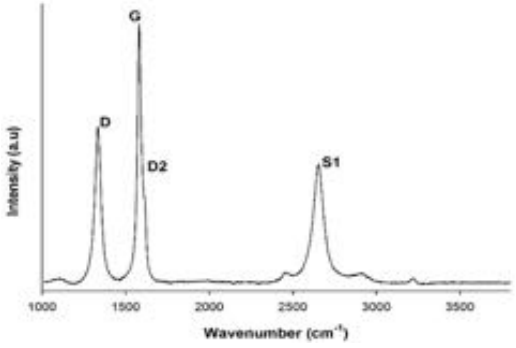

Figure 1: Representative Raman spectra obtained for the studied graphic material.

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