



## **Raman micro-spectroscopy of carbonaceous material using the 633nm line of a He-Ne laser: application to the metamorphic rocks of Attica**

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Raman spectra data of carbonaceous material (RSCM) from low-grade metamorphic rocks of Attica allows the application of a modified empirical RSCM thermometer. Previous Raman studies of carbonaceous material from regionally metamorphosed rocks have focused on the dependence of graphitization on temperature using laser sources with 514.5nm, 532nm and 785nm (Beyssac et al. 2002; Tice et al. 2004; Rahl et al. 2005). We have performed Raman spectral analyses using the 632.817 nm line of a He-Ne laser. For the calibration procedure, independent thermobarometric methods were applied. The samples were calibrated for the temperature range 250-550<sup>0</sup>C. The R1 (D1/G)<sub>H</sub> ranges between 3.22 and 0.12 and the R2 [D1/(D1+D2+G)]<sub>A</sub> between 0.73 and 0.10; both ratios decrease with temperature. The R1 decreases at constant rate, whereas the R2 variation rate increases above ~350<sup>0</sup>C. Following the approach of Rahl et al. (2005), the T, R1 and R2 parameters of the calibrated samples are best fitted using a second order non-linear polynomial function of the form T(<sup>0</sup>C)=609.24-84.83R<sub>1</sub>-489.08R<sub>2</sub>+539.93R<sub>2</sub><sup>2</sup>.

We applied the modified RSCM thermometer for the determination of temperature of metamorphism of the HP/LT metamorphic rocks of Attica. The peak metamorphic temperatures of the lower and the upper tectonic units from Hymettus Mt and Lavreotiki Peninsula are ~420<sup>0</sup>C and ~315<sup>0</sup>C respectively. Those for the upper tectonic unit of Penteli are ~300<sup>0</sup>C.

## REFERENCES

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