

LETTER

Laser Raman spectroscopic measurements of water in unexposed glass inclusions

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ABSTRACT

A method is proposed for determining the water concentration in silicate melt inclusions (MI) by confocal micro-Raman spectroscopy, without exposing the inclusions for measurement (a prerequisite of all previous methods). The latter is important for extremely water-rich MI (e.g., those in evolved granites and pegmatites), which would lose H₂O on exposure. Furthermore, this technique permits determination of the water concentration in a single MI. We use a comparative technique, determining the total water content of a sample against a reference glass of known water content. Because this process is non-destructive it does not preclude the subsequent use of other analytical techniques.

Keywords: Raman spectroscopy, water determination, unexposed silicate melt inclusions, water in glasses