Molecular Fractionation of Ancient Organic Compounds in Deeply Buried Halite Crystals

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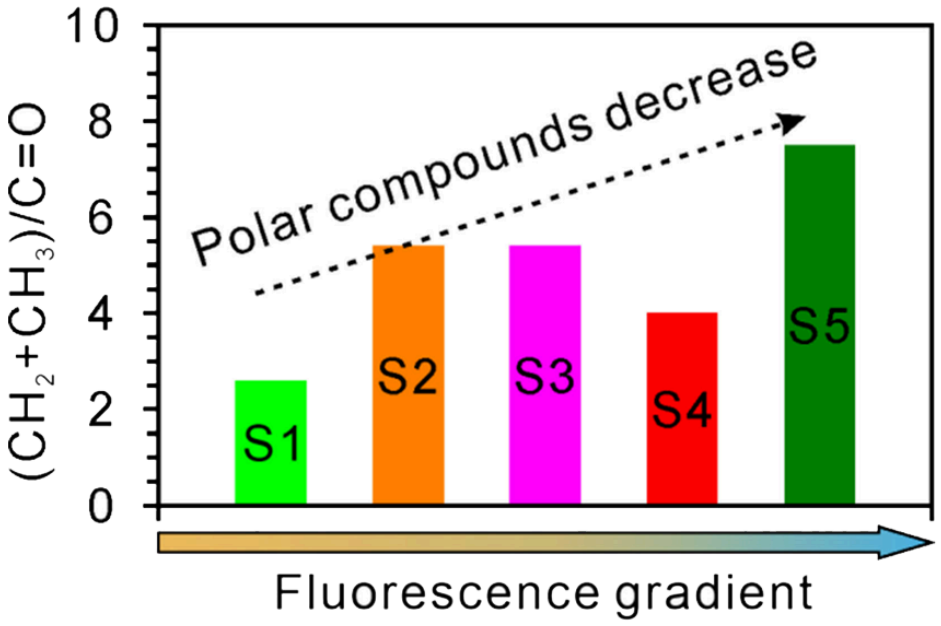

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For the first time, publication highlights the unique capability of linking the color of fluorescent liquid inclusion to its chemical identity through its infrared spectrum in sub-micron O-PTIR spatial resolution; the strong auto-fluorescence of the fluid organic inclusion does not affect the quality of the submicron infrared spectra. The sampling surfaces need not to be atomically smooth.

The color of fluorescent materials has been previously correlated to the aromatic contents and hence the age of the organics sealed in the inclusion; submicron O-PTIR uniquely observed the increasing of total organic phase relative to carbonyl band as the color becomes increasingly bluer; the latter discovery in the chemical nature of the organics could not be observed with fluorescence imaging alone.

It is hypothesized that the microfractures in the halite may have fractionated the organics as it is charged through the same structure over the years; thus, leading to the formation of "ancient inclusion trails." The chemistry of the liquid inclusions is believed to be unadulterated and undisturbed once trapped.

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