Laboratory astrophysics and interstellar ices

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In the colder parts of the interstellar medium, dust grains are covered with molecular ices composed of water, carbon monoxyde, carbon dioxyde, but also of more complex molecules such as methanol. They act as the main molecular reservoir of these regions and are therefore of high interest in astrochemistry.

These ices evolve as they receive energy from their environment, either thermal energy or non-thermal energy (cosmic rays, photons). These interactions will eventually modify the ice composition, or release molecules/radicals into the gas phase. It will thus have an important role in the gas phase abundance measured from observations by the most recent radiotelescopes (ALMA, NOEMA).

Recent results from laboratory experiments on interstellar ice analogs exposed to some kind of energy will be presented (eg [1], [2], [3], [4]). When possible their link with the interstellar observations or with the astrochemical models will be highlighted.

Références

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