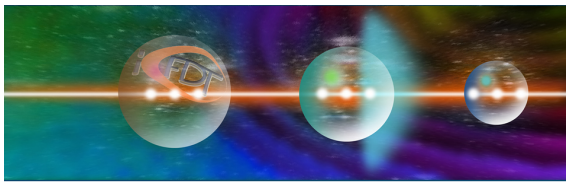

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Laser based D2O sensing technique for nuclear and biomedical applications

Tuesday, 22 October 2024 17:25 (10 minutes)

To efficiently control and monitor the usage of D2O is of paramount importance in many research domains. In the biomedical field, D2O detection is essential for metabolic studies and tracing water in biological tissues, providing new tools for medical and clinical research. In the nuclear sector, monitoring D2O is crucial for controlling fission processes since it is used both as coolant and moderator for ensuring the safety of nuclear plants. For this, the development of advance sensors is crucial. In this work we present a new, fast and reliable method for the assessment of D2O in water, down to a few percentage. The method makes use of a Quantum Cascade Laser (QCL) photoacoustic system developed in our laboratory. The reported results demonstrate the potential of this technique to provide accurate and reliable data. Additionally, this technique is promising for environmental monitoring, enabling the detection of pollutants and tracing the water cycle in various ecosystems.

Primary author: PUIU, Adriana (ENEA)

Co-authors: Dr PASQUO, Alessandra (ENEA); Dr POLLASTRONE, Fabio (ENEA); Dr GIUBILEO, Gianfranco (ENEA)

Presenter: PUIU, Adriana (ENEA)

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