(BIO-)MOLECULAR COMPOUNDS DETECTION AND ANALYSIS WITH INNOVATIVE NONLINEAR OPTICAL METHODS

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IN COOPERATION WITH : iLM

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KEYWORD(S) :

SCIENTIFIC CONTEXT :

Detection and characterization of (bio-)chemical based compounds and materials has become of utmost importance in a broad range of domains, from environmental and security monitoring to climate science and astrophysics. This endeavor requires new concepts and new instruments, with a special emphasis towards near-IR and Mid-IR spectral domains where compounds have distinct optical fingerprints.

MISSIONS :

The project aims at conceiving new concepts and designing new instrumentation to achieve these aims using nonlinear optics based protocols. In particular, innovative strategies based on nonlinear optical processes, either quadratic or cubic processes like frequency doubling or nonlinear absorption and refraction will be proposed and enabled, building on the already known skills of the research group where the work will be conducted. These strategies will involve the use of nanoparticles, either dielectric or plasmonic ones and possibly entail surface chemistry, in order to achieve vectorization and specificity to target analytes of the protocols thus designed.

OUTLOOKS :

Opportunities to perform transfer of technology will be seeken.

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