Laboratoire PPSM – UMR CNRS 8531

Photochimie et Photophysique Supramoléculaires et Macromoléculaires

Séminaire PPSM

Lundi 8 Septembre 2014 - 11h00

Auditorium D. Chemla - Bâtiment IDA

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Invité par : Robert Pansu

«Laser-induced phase separation dynamics of binary liquid systems and the application of dynamic solvents as reaction fields»

Some mixtures of water and organic solvents show phase separation by temperature rise. Water molecules can be vibrationally excited with infrared laser pulses, which initiates fast phase separation of binary mixtures. The dynamics of such phase separation was monitored with time-resolved Raman spectroscopy and nanosecond microscopic imaging. It was found that C-H vibration modes of organic molecules were sensitive to inter-molecular hydrogen bonds and thus were useful to study phase separation dynamics from a molecular viewpoint. The growth rates of micro-droplets in liquids followed scaling laws, which enabled us to deduce the initial size of liquid structures to be about 70 nm at 1 microsecond. The origin of co-operative motion of molecules during phase separation will be discussed. Examples of chemical reactions during phase separation will be also presented.

References:

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