SEMINAIRE ISMO

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"Cage" nano and micro-particles for biomedical applications

Drug delivery systems are engineered technologies to administer pharmaceutical ingredients to improve their therapeutic effects, aiming at minimizing their side effects by means of targeted delivery and/or controlled release. "Cage" particles recently drew special attention since they could act as "drug containers" which potentially load large amount of drugs, improve their stability and offer the possibilities to co-encapsulate synergic drugs.

Cyclodextrins (CDs) are typical "cage" molecules with a hydrophobic cavity and a hydrophilic outer surface. Porous microparticles of CD based metal organic frameworks (CD-MOFs) were successfully synthesized and lansoprazole was incorporated reaching payloads as high as 23(wt)%. Another strategy was to use water-stable MOFs made of iron trimesate. The mechanism of degradation was unraveled under the basis of analyzing each individual particle. Moreover, co-encapsulation of two synergic antibiotics was achieved following a "green" procedure. Each drug preferentially located in a separate nanoMOF compartment. In addition to their application for infection treatment, nanoMOFs were shown recently to exhibit intrinsic radioenhancing properties. Advantageously, they contributed synergistically with the incorporated drug to eradicate cancer cells. These results pave the way towards the design of engineered nanoparticles in which each component plays a role in cancer treatment.

Mardi 25 juin 2019 à 11 h
Amphithéâtre du bât 520 (3ème étage)
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