

Nanohybrid defective metal organic frameworks for sensing

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Metal organic frameworks (MOFs) have potential for being applied as enhanced labels on sensors and biosensors. In our approach, we combine magnetic nanobeads (MNBs) as the core material and defective MOFs as the shell to fabricate a nanohybrid with highly tunable structures of large surface areas, well-defined porosity and chemical stability.

MOFs have been reported in diverse sensing applications, such as gas adsorption[1], catalysis[2], drug delivery[3], and biosensing (e.g. lateral flow tests)[4].

Our nanohybrid could work as a probe for detecting glycoproteins, present in several bacteria, by combining boronic acid on their surface. In this way, the nanohybrid would be able to recognize bacteria without using antibodies, being thus more stable and cheaper to produce. In addition, MOFs could act as a fluorescent label, while taking advantage of the magnetic properties of MNBs to pre-concentrate and extract the targets from complex samples..

References

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