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Monoliths nanoparticles and metal-organic frameworks

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The science of chromatographic separation has advanced significantly as a result of the discovery of monolithic media, and this has raised the field's importance in a variety of applications. Higher permeability and lower flow resistance in monolithic media allow for high-throughput performance, resolution, and short run times in chromatographic techniques. The developing technology for preparing monolithic stationary phases is revolutionizing the column technology for separating complex biological samples. Monolithic columns with smaller inner diameters, longer lengths, and specific selectivity to enantiomers or peptides have played vital roles in hyphenated systems. These techniques using porous monoliths offer several advantages, including miniaturization, online coupling with analytical instruments, and a hyphenated system coupled with mass spectrometers. Furthermore, monoliths are the perfect support medium for imprinting template-specific sites, producing ultra-high selectivity monoliths known as molecularly imprinted monoliths. This lecture discusses the background of the idea, its benefits and limitations, several methods for preparing monoliths, monoliths made of nanoparticles, and monoliths made of metal-organic frameworks. Two application areas of monolithic metal-organic framework and nanoparticle monoliths are provided.

Keywords: Monoliths media, Monoliths characterization, Nanoparticles monoliths, Monoliths metal-organic frameworks.

Biography

Mohamed Hefnawy is working at King Saud University, Saudi Arabia

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