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MIP-based optical sensing strategies: pros and cons

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This presentation focuses on the application of molecularly imprinted polymers as selective recognition elements for the development of optical sensors. Two different approaches will be discussed for the development of such devices. The first is based on the preparation of MIP nanopatterns on silicon substrates using electron beam (EBL) direct writing. A linear copolymer has been synthesized showing positive-tone behavior for both EBL and DUV photolithography. The material was applied to the preparation of nanostructured MIP film-based arrays that were highly sensitive and selective to rhodamine 123 (R123), selected as a model fluorescent template molecule [1].

The second sensing scheme was based on the development of a fiber optic microarray platform prepared by random self-assembly of MIP microspheres into a fiber optic microwell array [2]. The device has been applied to the analysis of the antimicrobial enrofloxacin (Enro), in serum samples. The sensing mechanism is based on a fluorescent competitive assay between the target antibiotic and a novel highly fluorescently-labelled Enro derivative, for the selective binding sites in the MIP microspheres. The imaging fiber bundles were interrogated using an epi-fluorescence microscope with a charge-coupled device (CCD) camera as detection system [3]. As a proof of concept, the MIP/NIP microspheres have been encoded with two different dyes confirming the validity of this approach for MIP-based multiplexing.

References

[1]. Carrasco, S.; Canalejas-Tejero, V.; Navarro-Villoslada, F.; Barrios, C. A.; Moreno-Bondi, M. C. *J. Mat. Chem. C.*, **2014**, *2*, 1400.

[2]. Deiss, F.; LaFratta, C. N.; Symer, M.; Blicharz, T. M.; Sojic, N.; Walt, D. R. *J. Am. Chem. Soc.*, **2009**, *131*, 6088.

[3]. Walt, D. R. *BioTechniques*, **2006**, *41*, 529.