Fluorescent Nanozeolite Receptors for the Highly Selective and Sensitive Detection of Neurotransmitters in Water and Biofluids

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The sensitive *and* selective detection of small-molecule metabolites, hormones, and neurotransmitters, remains challenging. Instrumental-based detection methods (HPLC-MS, NMR) are limited by their capabilities for high-throughput screening (HTS). The development of molecular recognition-based methods is highly desirable but current synthetic hosts show low affinities and selectivity for endogenously occurring molecule targets.[1]
We introduce a novel class of zeolite-based artificial receptors (ZARs) that reach practical key parameters for neurotransmitter detection in biofluids for the first time.[2] Fully synthetic ZARs are based on nanoporous materials, are tunable by their cofactor and framework properties, can be readily prepared in a large scale, and show potential for HTS. In addition, FARs feature advantageous imaging properties, *e.g.*, a strong brightness and capability for ratiometric and two-photon (2P) imaging.

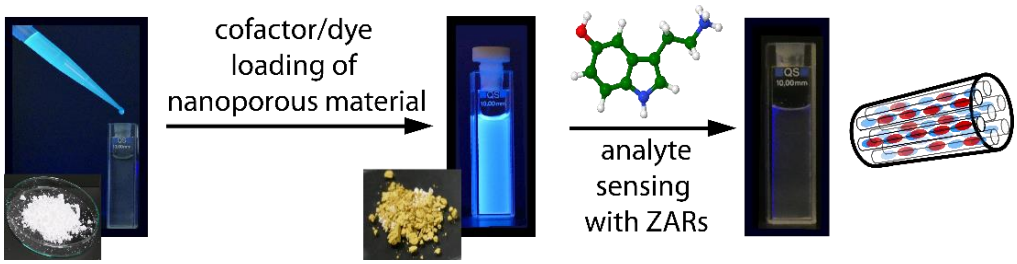

Figure 1. Self-assembly of zeolite-based artificial receptors (ZARs) and analyte sensing with ZARs.

References:

[1] J. Krämer, R. Kang, L. M. Grimm, L. De Cola, P. Picchetti, F. Biedermann, *Chem. Rev.* **2022**, 122, 3459-3636.
[2] L. M. Grimm, S. Sinn, M. Krstić, E. D'Este, I. Sonntag, E. A. Prasetyanto, T. Kuner, W. Wenzel, L. De Cola, F. Biedermann, *Adv. Mater.* **2021**, 33, 2104614.