Electronic Supplementary Material (ESI) for Analyst.


# Supporting information

# Quantifying plasticizer leakage from ion-selective membranes - a nanosponge approach

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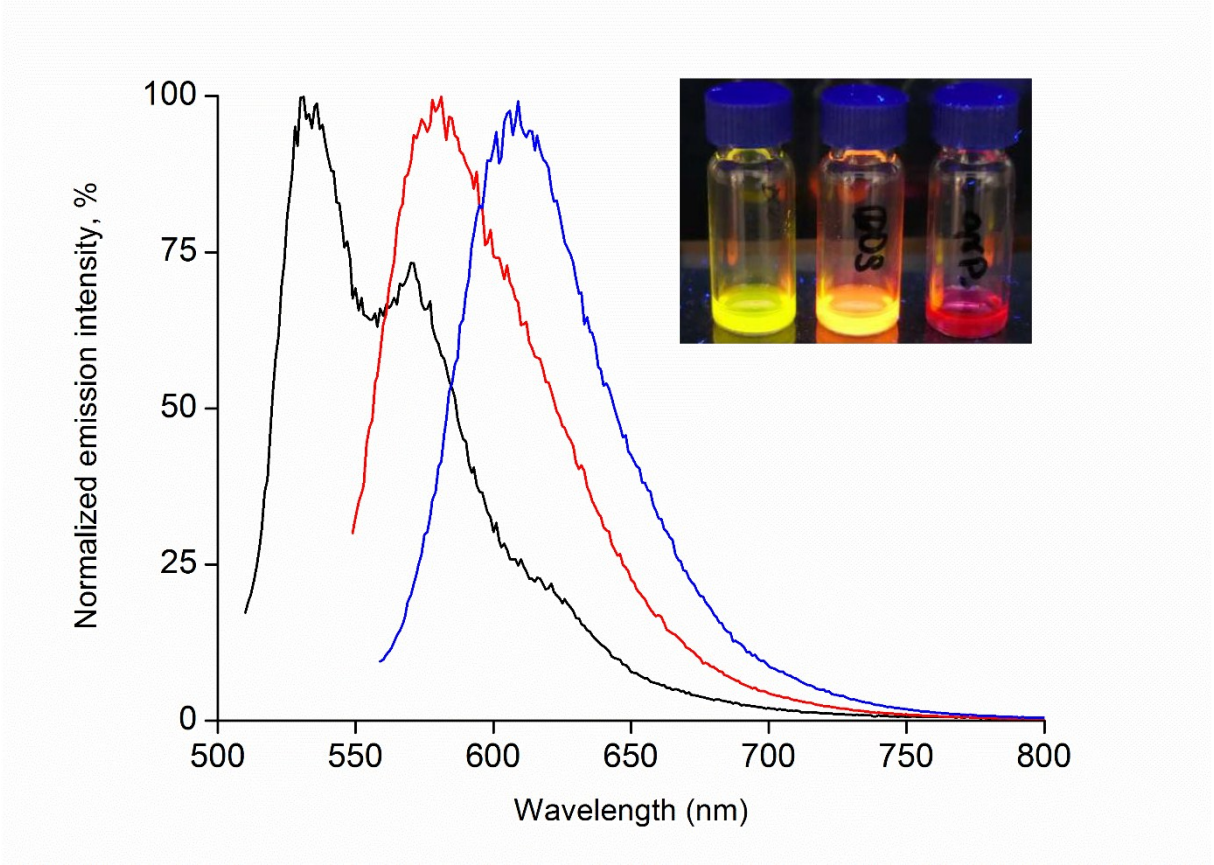


Fig S1. Emission spectra of Nile red dissolved in (red line) DOS, (blue line) oNPOE or (black line) hexadecane in concentration 0.05 mg/mL, excitation wavelength 530 or 540 nm, respectively. Inset: picture in UV light of Nile red solutions from left to right in hexadecane, DOS and oNPOE.

A) B)

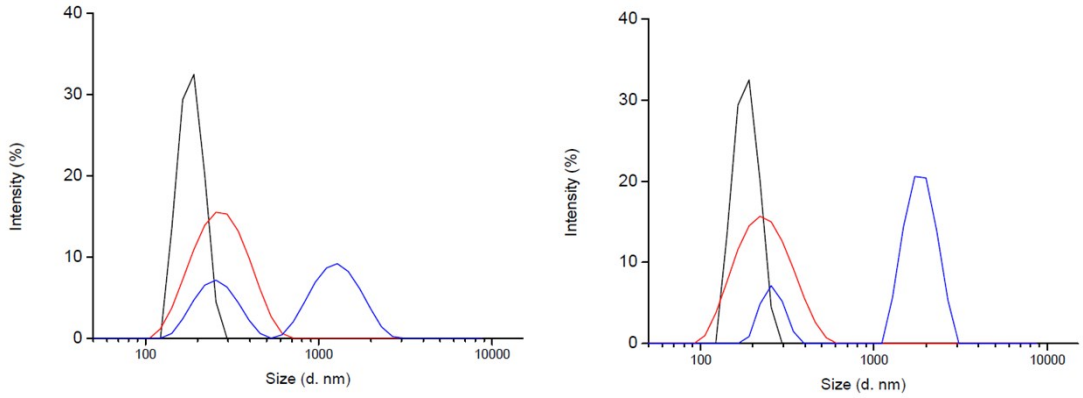


Fig S2. Size distribution vs. intensity obtained for tested nanospheres in the presence of A) DOS and B): (black line) in the absence of plasticizer in the sample, (red line) in the presence of 3 ppm of plasticizer and (blue line) 460 or 500 ppm of plasticizer in solution, for DOS and oNPOE, respectively.

A) B)

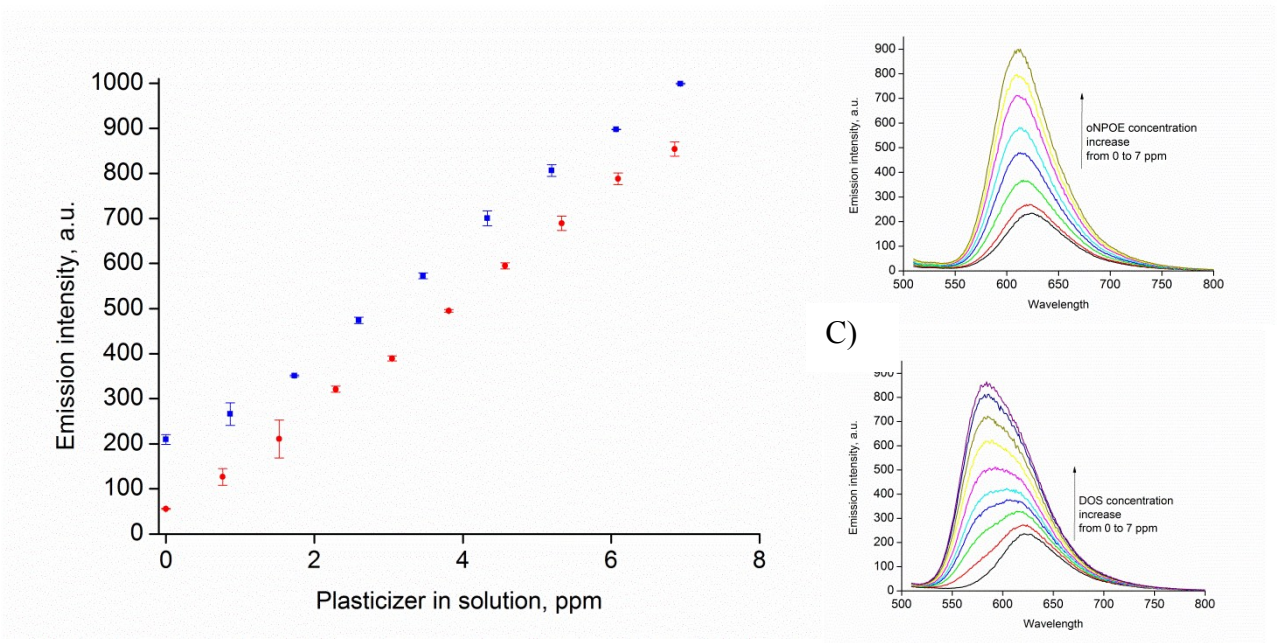


Fig S3. The dependence of emission read at maximum on concentration of plasticizer in the sample: (red symbols) emission read at 580 nm for DOS and (blue symbols) emission read at 610 nm for oNPOE; error bars SD of results obtained in 2 different experiments. Emission spectra recorded: B) for oNPOE and C) for DOS concentration increase.

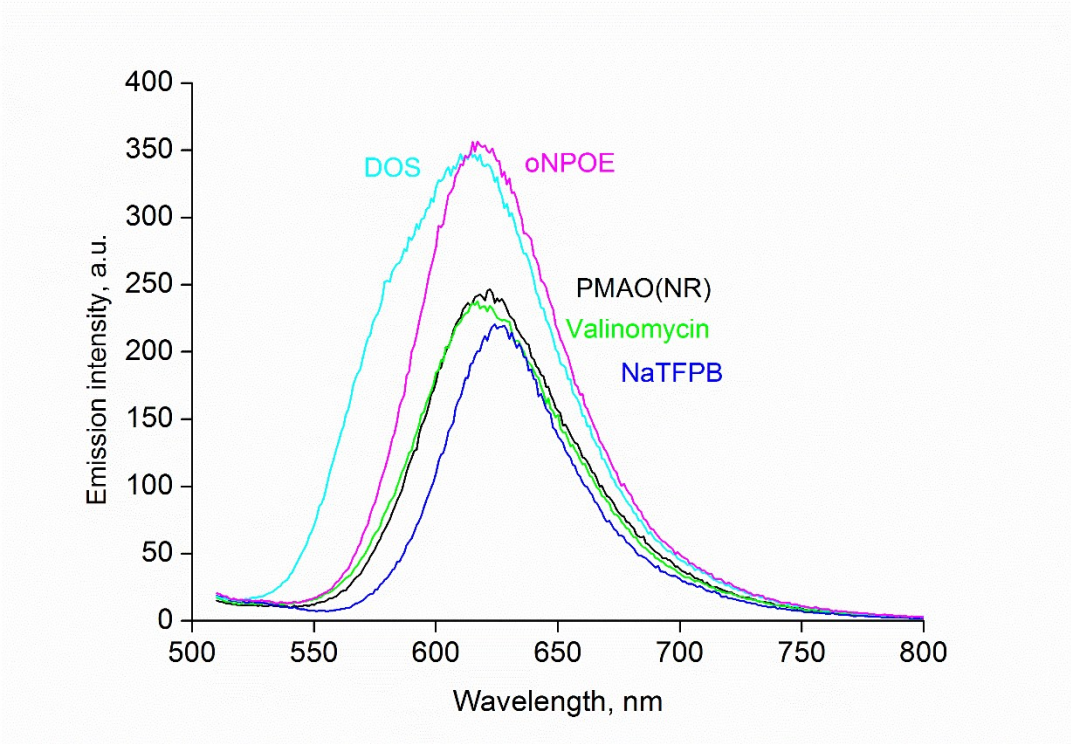


Fig S4. Effect of different ion-selective membrane constituents on emission response of PMAO(NR) nanosponges: (**black line**) PMAO(NR) nanospheres in solution *in the absence* of membrane components, (**navy blue line**) PMAO(NR) in the presence of 1 ppm of NaTFPB, (**green line**) PMAO(NR) in the presence of 1.7 ppm of valinomycin, (**blue line**) PMAO(NR) in the presence of 15 ppm DOS, (**magenta line**) PMAO(NR) in the presence of 15 ppm of oNPOE in solution. The concentrations used are reflecting proportions of plasticizers and other components on ISM in the membrane, assuming leakage of plasticizer comparable with that found in the paper.

Quantitative LC MS analysis

***Standards preparation***

All calibration standards were aqueous dispersion of plasticizers, prepared the same way as for optical measurements.

***Measurements***

To obtain satisfactory ionization of the investigated compounds four different approaches were checked: electrospray ionization (ESI) in positive (+) and negative (-) mode as well as atmospheric pressure chemical ionization (APCI) in positive and negative mode. Having assessed the signal intensities ESI (+) were chosen for DOS and APCI (-) for o-NPOE.

ESI MS method has been applied on LC MS system consisting of Agilent 1290 Infinity UHPLC fitted with Agilent Eclipse Plus C-18 (2.1x50mm, 1.8μm) connected to Agilent 6540 Q ToF mass spectrometer.

APCI method has been used Agilent 1290 Infinity UHPLC fitted with Agilent Zorbax Extend C-18 column (2.1x50mm, 1.8μm) connected to Agilent 6460 triple quadrupole mass spectrometer.

In both cases mobile phase was: water with 0.1% formic acid and acetonitrile with 0.1% formic acid. ESI method was run in isocratic conditions, while APCI utilized gradient elution.