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**Metsulfuron-methyl determination in environmental samples by solid surface  
fluorescence**

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**ABSTRACT**

A new environmental friendly methodology for metsulfuron-methyl quantification based on the fluorescent signal enhancement of rhodamine B dye has been developed. A cationic surfactant (cetyltrimethylammonium bromide, CTAB) and an anionic one (sodium dodecylsulfate) were employed to preconcentrate the herbicide using a coacervation phenomenon, in sodium borate buffer medium (pH 9.2). The coacervate phase was collected on a nylon membrane (0.45  $\mu\text{m}$ ) and the solid surface fluorescence signal was determined ( $\lambda_{\text{exc}} = 515 \text{ nm}$ ,  $\lambda_{\text{em}} = 565 \text{ nm}$ ). Experimental variables that influence on preconcentration step and fluorimetric sensitivity have been studied and optimized using response surface methodology. Under optimal working conditions, a LOD of  $0.17 \mu\text{g L}^{-1}$  and a LOQ  $0.53 \mu\text{g L}^{-1}$  was obtained. The zero<sup>th</sup> order regression calibration was linear from  $0.53$  to  $5.00 \mu\text{g L}^{-1}$ . The method showed adequate sensitivity and selectivity, and was applied to the determination of trace amounts of metsulfuron-methyl in environmental water samples. The proposed methodology implies an alternative to traditional techniques for metsulfuron-methyl monitoring using an accessible instrument in control laboratories,

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