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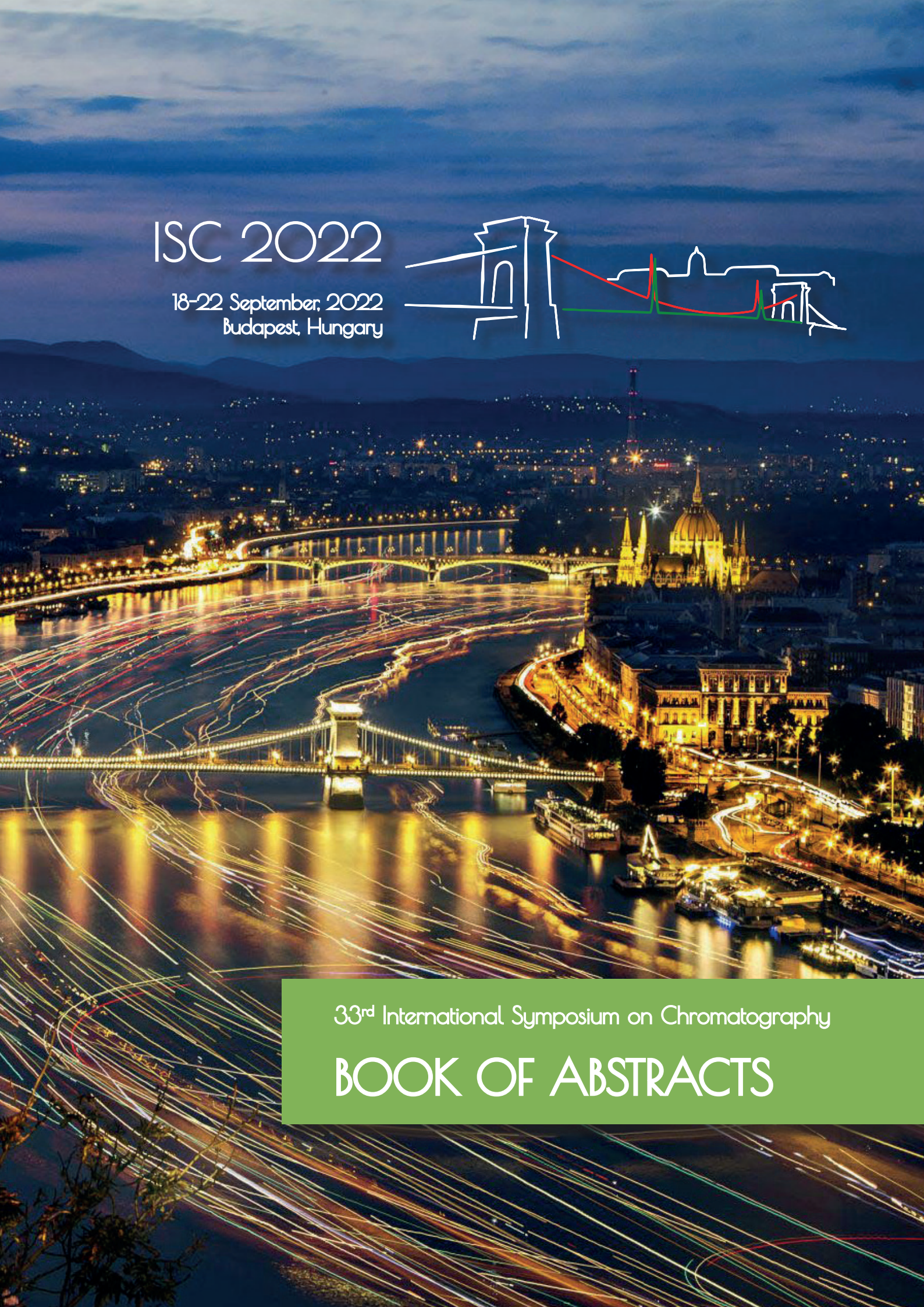

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Preconcentration of OTCs (OrganoTin Compounds) in Water Matrices, Speciation Investigation by HPLC-ICP-MS

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OTCs (*OrganoTin Compounds*) are well known global pollutants. They are considered endocrine disruptors, responsible for genetic, reproductive, and metabolic disorders [1]. Due to their persistence, OTCs presence and bioaccumulation in living organisms is still a current issue [2]. The Legislative Decree *D.Lgs 172/2015* set the AA-EQS (*Annual Average value – Environmental Quality Standard*) for TBT (*Tributyltin*) compounds in surface water at 0.2 μg L^{-1}. Therefore, efficient and sensitive analytical methods in compliance with the *D.Lgs 172/2015* are needed. Since these pollutants are present at low concentrations in natural waters, it is necessary to pre-concentrate the sample in order to obtain a detectable concentration. The purpose of this study was to develop a method for the preconcentration and determination of organotin compounds (tributyltin TBT, dibutyltin DBT, monobutyltin MTB), applicable to seawater samples, characterized by a complex matrix. In this work, we used Beta zeolite with Silica/Alumina Ratio 25 (β25) to adsorb OTCs, and then a solution of methanol and tropolone to extract the analytes. The determination of the concentration of OTCs in the solutions was carried out by high performance liquid chromatography hyphenated to inductively coupled plasma mass spectrometer (HPLC-ICP-MS) which can satisfy the low LOQ required, does not involve derivatization steps and allow the speciation of organotin compounds. Satisfying results were obtained for the preconcentration method developed, with extraction recoveries up to 90%. In addition, HPLC-ICP-MS allowed to achieve a good separation of the OTCs investigated.

References

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[2] T. Fortibuoni et al., Environ. Sci. Technol. 2013, 47, 3370−3377

Keywords: OTCs, Sample preparation, Adsorbent material, Environmental sample