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## **Supported Ionic Liquids as alternative adsorbents for the removal of cytostatic drugs from human urine**

Márcia C. Neves, Maria João Santos, Beatriz Rocha, Francisca A. e Silva, Ana Catarina Sousa, Mara G. Freire

CICECO-Aveiro Institute of Materials, Department of Chemistry, University of Aveiro, Portugal  
email: mcneves@ua.pt

### **Abstract**

Cancer is a global epidemic, with over 18 million new cancer cases in 2018 [1]. Pharmaceutical drugs, including toxic cytostatics, are one of the most used strategies in cancer treatment. However, cytostatics, like other pharmaceutical drugs, are excreted through urine, reaching wastewater treatment plants (WWTPs), and subsequently contaminating the aquatic environment [2, 3]. Thus, there is the urgent need to develop new technologies to prevent the introduction of these toxic chemicals in the environment.

The use of supported ionic liquids (SILs) is a promising technological tool to remove cytostatic drugs from aqueous matrices. In this work, several SILs based on quaternary ammonium structures using silica as the support material were synthesized and characterized. In order to evaluate the SILs adsorption capacity for cyclophosphamide (a model cytostatic drug), the adsorption kinetics and isotherms were determined. Overall, the obtained results demonstrated that SILs capacity to remove cyclophosphamide from aqueous samples is dependent of the cation structure. These promising results pave the way to design new effective and alternative adsorbents for cytostatics removal directly from the point source, urine.

### **References**

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