

**ELECTROCHEMICALLY-AIDED CONTROL OF  
SOLID PHASE MICRO-EXTRACTION (EASPME)  
USING CONDUCTING POLYMERS**

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A method for the extraction and selective determination of the neutral arsenobetaine (AsBe) is proposed using electro-synthesized organic conducting polymer of 3-octylthiophene (OCP) films. The polymer films are used as solid phase micro-extraction (SPME) elements for the direct and specific extraction of trace levels of AsBe. The separation and detection of the arsenic (As) species is attained using HPLC-ICP-MS interfaced system. The selectivity of the method towards neutral AsBe in the presence of other anionic As-species is explained in terms of the change in the hydrophobic nature of the film during the doping/undoping processes. The type of poly(3-alkylthiophene), the thickness of the film, the applied potential during uptake and release of AsBe are among the factors optimized for the method. The uptake and release time and potential profiles are given and a thermodynamic model is proposed. The performance of poly(3-octylthiophene), poly(3-dodecylthiophene), and poly(3-hexadecylthiophene) films was compared. The best results are obtained using poly(3-octylthiophene). The detection limit and linear dynamic range using this method are  $14 \text{ ng mL}^{-1}$  and  $70\text{--}1200 \text{ ng mL}^{-1}$ , respectively. The method was validated using a standard reference material and tested for the determination of AsBe in some environmental samples.