Accepted Manuscript

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PII: S0013-4686(17)32664-6

DOI: 10.1016/j.electacta.2017.12.101

Reference: EA 30889

To appear in: *Electrochimica Acta*

Received Date: 24 November 2017

Revised Date: 28 November 2017

Accepted Date: 14 December 2017

Please cite this article as: N. Anwar, G. Armstrong, F. Laffir, C. Dickinson, M. Vagin, T. McCormac, Redox switching of polyoxometalate-doped polypyrrole films in ionic liquid media, *Electrochimica Acta* (2018), doi: 10.1016/j.electacta.2017.12.101.

Redox switching of polyoxometalate-doped polypyrrole films in ionic liquid media

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Abstract

The surface immobilization of the parent Dawson polyoxometalate (POM) as a counter-ion for the electropolymerization of polypyrrole (PPy) or as an electrode-adhered solid was utilized for voltammetric studies of the surface adhered POM in room temperature ionic liquids (RTIL). Illustrating the efficiency of intermediate stabilization, voltammetry at POM-modified electrodes in a PF_6-based RTIL revealed richer redox behaviour and higher stabilization in comparison with aqueous electrolytes and with BF_4-based RTIL, respectively. High stability of the POM-doped PPy towards continuous charge-discharge voltammetric redox cycles was confirmed by minor changes in film morphology observed after the cycling in RTILs.

Keywords: room temperature ionic liquid, polyoxometalate, voltammetry

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