

Plumbagin: A Natural Product for Smart Materials?

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Experimental Details

All reagents were of the highest grade available and used without further purification. Solutions of plumbagin (5 mM) were prepared in acetone. Stock glutathione and ascorbate solutions (typically 10 mM) were prepared in pH 7 Britton-Robinson buffer. Solutions of Ellmans reagent (1 mM) were prepared in pH 8 Britton-Robinson buffer. Electrochemical measurements were conducted using a μ Autolab computer controlled potentiostat (Eco-Chemie, Utrecht, The Netherlands) using a three electrode configuration consisting of either a glassy carbon working electrode (3mm diameter, BAS Technicol, UK) or Platinum foil electrode (1cm²). Platinum wire served as the counter electrode with a 3 M NaCl Ag | AgCl half cell reference electrode (BAS Technicol, UK) completing the cell assembly. The scan rate in all cases was 50 mV/s. Unless otherwise specified – all measurements were conducted at 22°C $\pm$ 2°C throughout. Electrochemical Quartz Crystal Microbalance (EQCM) measurements were obtained using a computer controlled Quartz Crystal Microbalance (Maxtek INC, USA) and polished 5 MHz Titanium / Gold crystals (Maxtek INC, USA).