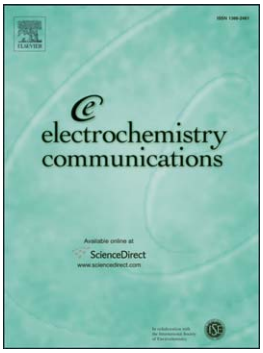

Solvent co-deposition during oxygen reduction on Au in DMSO $LiPF_6$

W.R. Torres, A.Y. Tesio, E.J. Calvo

PII: S1388-2481(14)00304-X
DOI: doi: 10.1016/j.elecom.2014.09.017
Reference: ELECOM 5283

To appear in: *Electrochemistry Communications*

Received date: 13 August 2014
Revised date: 17 September 2014
Accepted date: 22 September 2014

Please cite this article as: W.R. Torres, A.Y. Tesio, E.J. Calvo, Solvent co-deposition during oxygen reduction on Au in DMSO $LiPF_6$, *Electrochemistry Communications* (2014), doi: 10.1016/j.elecom.2014.09.017

SOLVENT CO-DEPOSITION DURING OXYGEN REDUCTION ON Au IN DMSO $LiPF_6$

W.R. Torres, A.Y. Tesio, E.J. Calvo*

INQUIMAE, Facultad de Ciencias Exactas y Naturales, Pabellón 2,

Ciudad Universitaria, AR-1428 Buenos Aires, Argentina

Abstract:

Rotating ring disk electrode (RRDE) and electrochemical quartz crystal microbalance (EQCM) have been employed for chronoamperometry of the oxygen reduction reaction (ORR) on gold electrodes in O_2 saturated $LiPF_6$/DMSO electrolyte. The Au ring electrode (E_R = 3.0 V) detects a small fraction of soluble superoxide generated at the disk while EQCM detects the mass of ORR insoluble products. By integration of the ORR current transient the mass to charge plots exhibit mass per electron (mpe) values which largely exceed those expected for simple O_2 to O_2Li or Li_2O_2 reactions. Therefore the co-deposition of solvent and /or side reactions such as electrolyte degradation should be taken into consideration to explain the experimental evidence.

Key words: lithium air batteries, ORR, superoxide, lithium peroxide, EQCM