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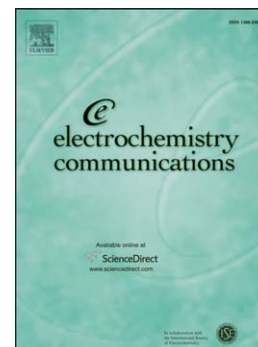
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SOLVENT CO-DEPOSITION DURING OXYGEN REDUCTION**ON Au IN DMSO LiPF_6**

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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 $\text{LiPF}_6/\text{DMSO}$ electrolyte. The Au ring electrode ($E_R = 3.0 \text{ V}$) 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

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