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Effect of cathode porosity on the Lithium air cell oxygen reduction reaction – a rotating ring-disk electrode investigation

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Abstract

The kinetics of the oxygen reduction reaction (ORR) on the practical air cathode in a Lithium air cell, which is conventionally composed of porous carbon with or without catalysts supported on it, was investigated. The mechanism and kinetics of the oxygen reduction reaction (ORR) was studied on a porous carbon electrode in an oxygen saturated solution of 0.1M Lithium bis-trifluoromethanesulfonimide (LiTFSI) in Dimethoxyethane (DME) using cyclic voltammetry (CV) and the rotating ring-disk electrode (RRDE) technique. The oxygen reduction and evolution reactions were found to occur at similar potentials to those observed on a smooth, planar glassy carbon (GC) electrode. The effect of the porosity and the resultant increase in surface area were

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