Supporting Information

In-situ Real-time and Quantitative Investigation on Stability of Non-aqueous Lithium Oxygen Battery Electrolytes

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Figure S1. Potential profiles (a, d), the rates of O\textsubscript{2} evolution at charge (b, e), and the rates of CO\textsubscript{2} evolution at charge (c, f) in Li-O\textsubscript{2} cells with DMA-LiNO\textsubscript{3} electrolyte (a, b, c) or TEGDME-LiTFSI electrolyte (d, e, f) during the five cycles at current density of 500 mA g\textsuperscript{-1}. Energy efficiency (g), oxygen efficiency at charge (h), and r\textsubscript{CO2} (i) as a function of cycle number in Li-O\textsubscript{2} cells with DMA electrolyte or TEGDME electrolyte over the five cycles at current density of 500 mA g\textsuperscript{-1}. 
Figure S2. Potential profiles (a, d), the rates of O$_2$ evolution at charge (b, e), and the rates of CO$_2$ evolution at charge (c, f) in Li-O$_2$ cells with DMA-LiNO$_3$ electrolyte (a, b, c) or TEGDME-LiTFSI electrolyte (d, e, f) over the five cycles at current density of 1000 mA g$^{-1}$. Energy efficiency (g), oxygen efficiency at charge (h), and r$_{CO2}$ (i) as a function of cycle number in Li-O$_2$ cells with DMA electrolyte or TEGDME electrolyte over five cycles at current density of 1000 mA g$^{-1}$. 
Figure S3. Potential profiles (a, d), the rates of O\textsubscript{2} evolution at charge (b, e), and the rates of CO\textsubscript{2} evolution at charge (c, f) in Li-O\textsubscript{2} cells with DMA-LiNO\textsubscript{3} electrolyte (a, b, c) or TEGDME-LiTFSI electrolyte (d, e, f) at the 10\textsuperscript{th} cycle with current density of 200 mA g\textsubscript{c-1}. 
Figure S4. Potential profiles (a), the rates of $O_2$ evolution at charge (b), and the rates of $CO_2$ evolution at charge (c) in Li-O$_2$ cells with TEGDME with 0.5 M LiNO$_3$ during the first two cycles. The current density is 200 mA g$^{-1}$. 