Abstract Submitted
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The Basic Understanding of Lithium Superoxide in Li-O_2 Battery[1] KAH CHUN LAU, Argonne National Lab, DENGYUN ZHAI, Graduate School at Shenzhen, Tsinghua University, China, HSIEN-HAU WANG, XIANGYI LUO, JIANGUO WEN, DEAN MILLER, PAUL REDFERN, JUN LU, LARRY CURTISS, KHALIL AMINE, Argonne National Lab — The electrochemical and chemical processes that involved in Li-O_2 battery are complex, and depend heavily on electrode materials, electrolytes, interfaces, and cell operating conditions. In non-aqueous Li-O_2 battery, the main discharge products are commonly known to be lithium peroxide (Li_2O_2), and possibly some other parasitic components (i.e. Li_2CO_3, LiOH, Li_2O). However, the superoxide intermediates and lithium superoxide (O_2^-, LiO_2) which are commonly known to be metastable can also be found as reported [1, 2]. Relative to these compounds (i.e. Li_2CO_3, Li_2O, LiOH, Li_2O_2) in discharge products, little is known about LiO_2. To have a basic understanding of lithium superoxide, both theoretical studies and experimental characterizations are important. In this presentation, the recent developments, studies and findings of this exotic species will be discussed. References: 1. D. Zhai$^+$, K.C. Lau$^+$, H. Wang, J. Wen, D. Miller, J. Lu, F. Kang, B. Li, W. Yang, J. Gao, E. Indacochea, L.A. Curtiss, K.A. Amine, Nano Lett. 15 (2), 1041-1046 (2015). 2. J. Lu$^+$, Y.J. Lee$^+$, X. Luo$^+$, K.C. Lau$^+$, M. Asadi$^+$, et. al. Nature (accepted).

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