Accepted Manuscript

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PII: S0925-8388(17)34592-9

DOI: 10.1016/j.jallcom.2017.12.377

Reference: JALCOM 44463

To appear in: *Journal of Alloys and Compounds*

Received Date: 16 October 2017

Revised Date: 26 December 2017

Accepted Date: 31 December 2017

Please cite this article as: J.C. Icaza, R.T. Haasch, R.K. Guduru, Effect of ion size and charge density on the electrochemical characteristics of α-MoO_3 using aqueous Be^{2+} and Mg^{2+} sulfate electrolytes, *Journal of Alloys and Compounds* (2018), doi: 10.1016/j.jallcom.2017.12.377.

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Abstract

We investigated the electrochemical characteristics of layer structured α-MoO_3 using two divalent ions (Mg^{2+} and Be^{2+}) of different sizes. The cyclic voltammetry studies showed a high specific capacity with Be^{2+} electrolyte, and galvanostatic intermittent titration (GITT) measurements revealed a higher diffusion coefficient for Be^{2+} in MoO_3 despite having a higher charge density than Mg^{2+}. The intercalation of both ions resulted in poor cyclability, but a slightly better performance with Be^{2+} electrolyte could be attributed to favored diffusion of Be^{2+} in MoO_3 due to its covalent nature as well as preferred coordination number.

Keywords: Diffusion; Electrochemical reactions; Electrode materials; Nanostructured materials; Energy storage materials.

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