

Electronic Supporting Information (ESI)

Electrolytic Calcium Hexaboride for High Capacity Anode of Aqueous Primary Batteries

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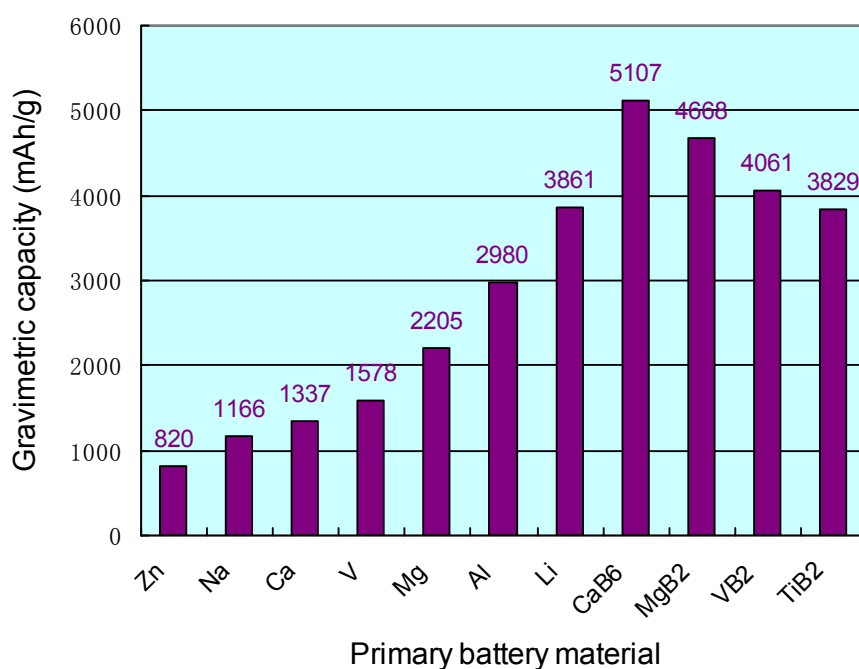


Figure S1. Theoretical gravimetric capacity of potential primary anode materials.

Table S1. Decomposition voltage of calcium borate in molten CaCl₂-NaCl at 600°C

Reactions (600 °C)	E(V)
$2\text{CaB}_2\text{O}_4 = \text{Ca}_2\text{B}_2\text{O}_5 + 2\text{B} + 1.5\text{O}_2 (\text{g})$	1.877
$3\text{CaB}_2\text{O}_4 = \text{Ca}_3\text{B}_2\text{O}_6 + 4\text{B} + 3\text{O}_2 (\text{g})$	1.896
$6\text{Ca}_2\text{B}_2\text{O}_5 = 4\text{Ca}_3\text{B}_2\text{O}_6 + 4\text{B} + 3\text{O}_2 (\text{g})$	1.952
$5\text{CaB}_2\text{O}_4 = 2\text{Ca}_2\text{B}_2\text{O}_5 + \text{CaB}_6 + 5\text{O}_2 (\text{g})$	1.962
$4\text{CaB}_2\text{O}_4 = \text{Ca}_3\text{B}_2\text{O}_6 + \text{CaB}_6 + 5\text{O}_2 (\text{g})$	1.973
$\text{CaB}_2\text{O}_4 = 2\text{B} + \text{CaO} + 1.5\text{O}_2 (\text{g})$	2.016
$8\text{Ca}_2\text{B}_2\text{O}_5 = 5\text{Ca}_3\text{B}_2\text{O}_6 + \text{CaB}_6 + 5\text{O}_2 (\text{g})$	2.017
$3\text{CaB}_2\text{O}_4 = \text{CaB}_6 + 2\text{CaO} + 5\text{O}_2 (\text{g})$	2.045
$\text{Ca}_2\text{B}_2\text{O}_5 = 2\text{B} + 2\text{CaO} + 1.5\text{O}_2 (\text{g})$	2.156
$3\text{Ca}_2\text{B}_2\text{O}_5 = \text{CaB}_6 + 5\text{CaO} + 5\text{O}_2 (\text{g})$	2.17
$\text{Ca}_3\text{B}_2\text{O}_6 = 2\text{B} + 3\text{CaO} + 1.5\text{O}_2 (\text{g})$	2.258
$3\text{Ca}_3\text{B}_2\text{O}_6 = \text{CaB}_6 + 8\text{CaO} + 5\text{O}_2 (\text{g})$	2.262
$2\text{NaCl} = 2\text{Na(l)} + \text{Cl}_2 (\text{g})$	3.226
$\text{CaCl}_2 = \text{Ca} + \text{Cl}_2 (\text{g})$	3.437