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(54) **LAYERED MATERIALS WITH IMPROVED MAGNESIUM INTERCALATION FOR RECHARGEABLE MAGNESIUM ION CELLS**

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**Related U.S. Application Data**

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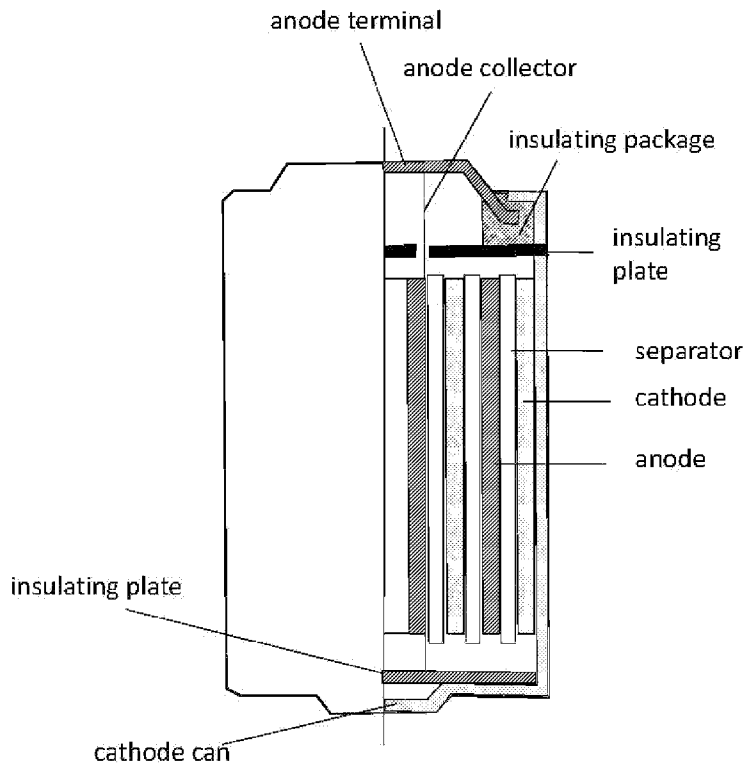
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(57) **ABSTRACT**

Electrochemical devices which incorporate cathode materials that include layered crystalline compounds for which a structural modification has been achieved which increases the diffusion rate of multi-valent ions into and out of the cathode materials. Examples in which the layer spacing of the layered electrode materials is modified to have a specific spacing range such that the spacing is optimal for diffusion of magnesium ions are presented. An electrochemical cell comprised of a positive intercalation electrode, a negative metal electrode, and a separator impregnated with a nonaqueous electrolyte solution containing multi-valent ions and arranged between the positive electrode and the negative electrode active material is described.

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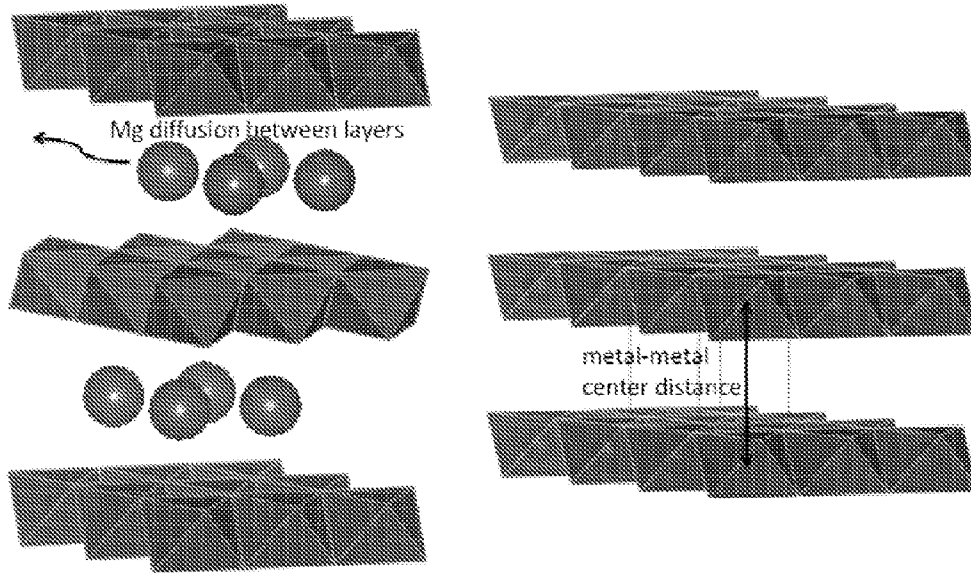


FIG. 1A

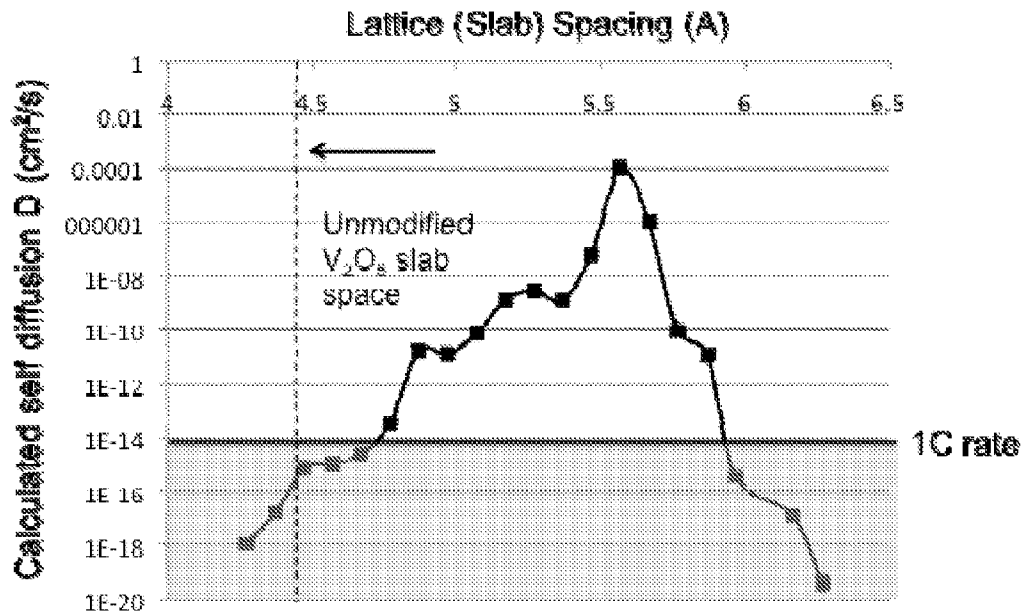


FIG. 2

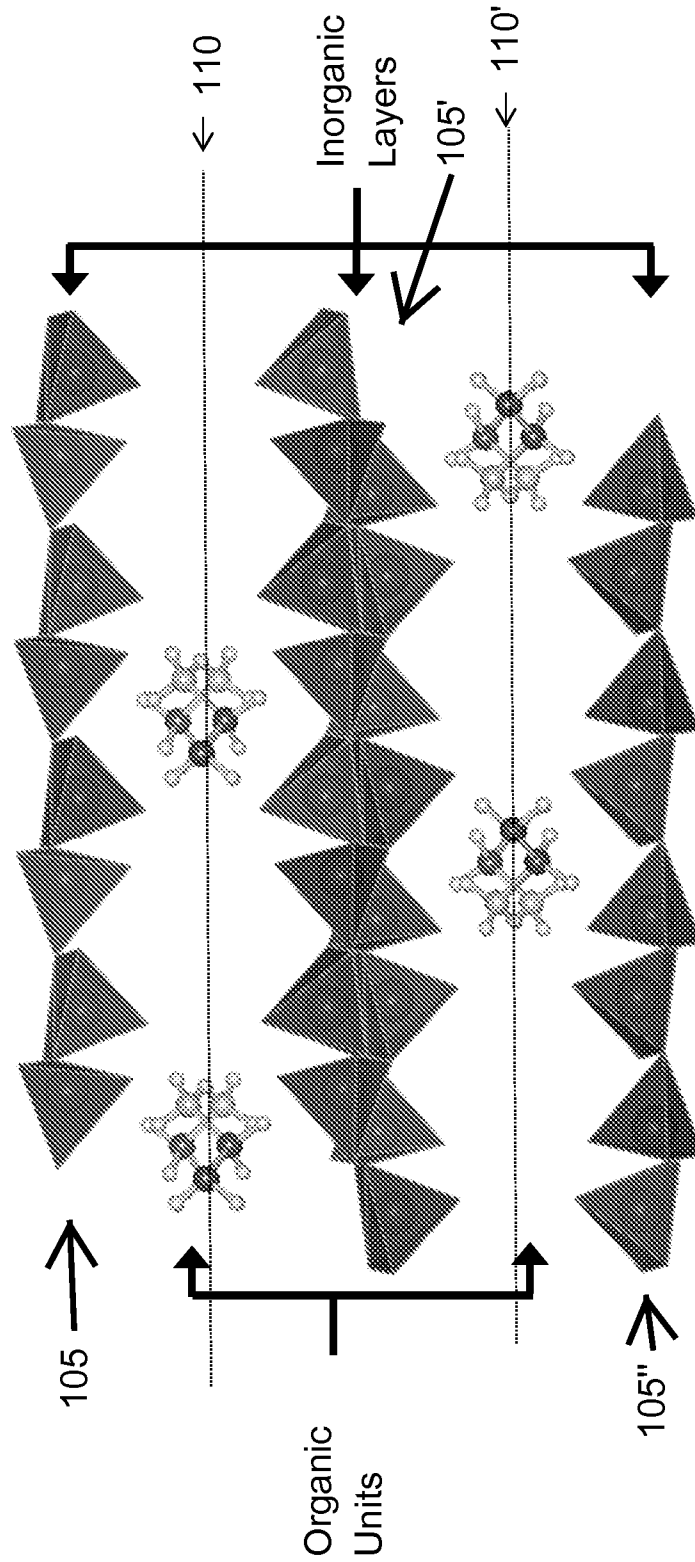


FIG. 1B

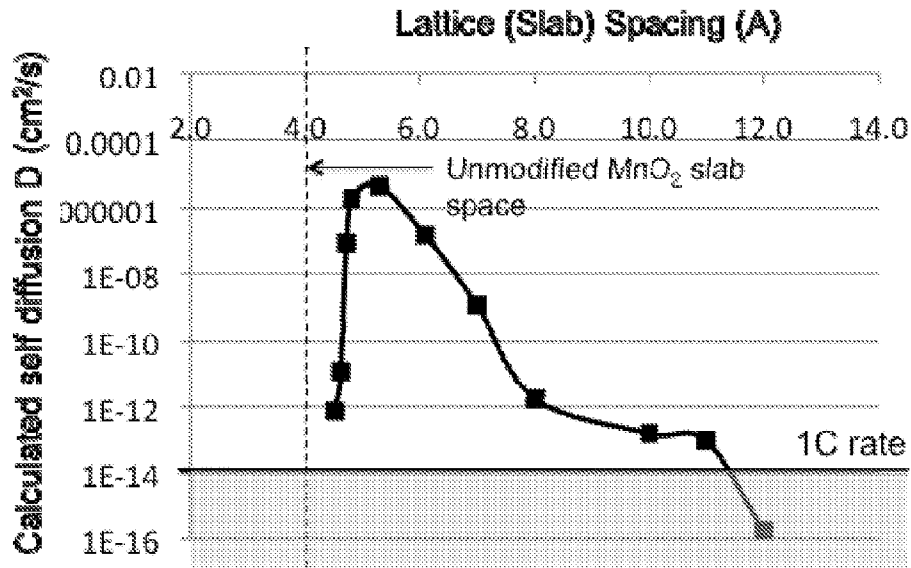


FIG. 3

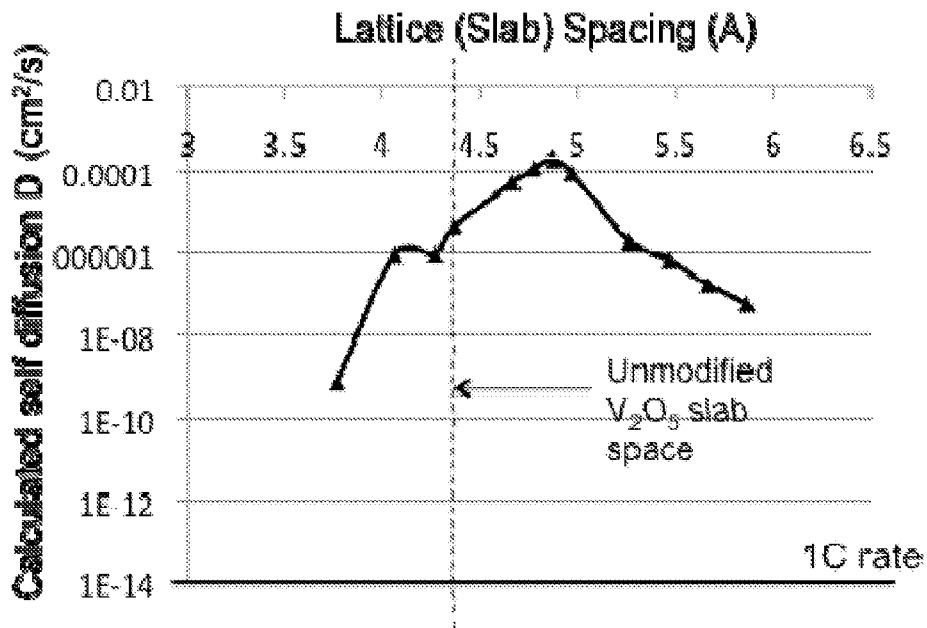


FIG. 4

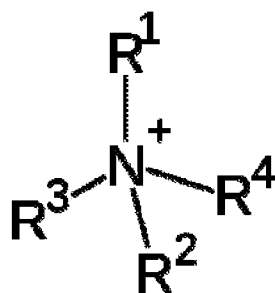


FIG. 5

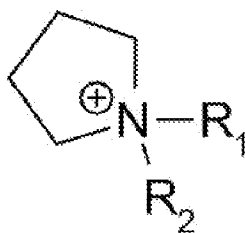


FIG. 6

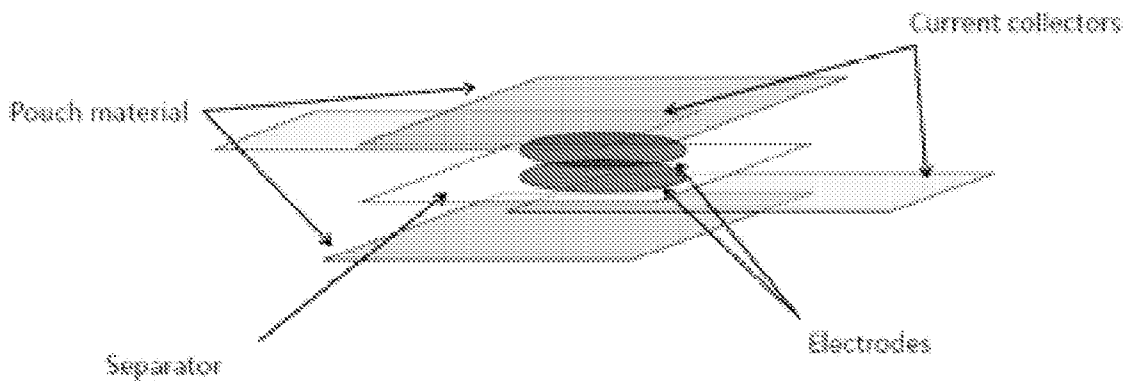


FIG. 21

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