



[54] METHOD FOR FABRICATING CARBON/LITHIUM-ION ELECTRODE FOR RECHARGEABLE LITHIUM CELL

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[57] ABSTRACT

The method includes steps for forming a carbon electrode composed of graphitic carbon particles adhered by an ethylene propylene diene monomer binder. An effective binder composition is disclosed for achieving a carbon electrode capable of subsequent intercalation by lithium ions. The method also includes steps for reacting the carbon electrode with lithium ions to incorporate lithium ions into graphitic carbon particles of the electrode. An electrical current is repeatedly applied to the carbon electrode to initially cause a surface reaction between the lithium ions and to the carbon and subsequently cause intercalation of the lithium ions into crystalline layers of the graphitic carbon particles. With repeated application of the electrical current, intercalation is achieved to near a theoretical maximum. Two differing multi-stage intercalation processes are disclosed. In the first, a fixed current is reapplied. In the second, a high current is initially applied, followed by a single subsequent lower current stage. Resulting carbon/lithium-ion electrodes are well suited for use as an anode in a reversible, ambient temperature, lithium cell.

34 Claims, 6 Drawing Sheets

