

List of Patents (National/International)

1. Double walled battery container with effective insulation useful for improved performance of magnesium - organic battery at sub - zero temperatures – N. Muniyandi, Sivashanmugam, S. Gopukumar, R. Udhayan and S. Vasudevan - Indian Patent Number 187047.
2. Process for the preparation of high voltage nano composite cathode (4.9 V) for Lithium ion batteries - S. Gopukumar, C. Nithya, R. Thirunakaran and A. Sivashanmugam -0105NF2010:2495DEL2010.
3. Process for Rapid synthesis of high voltage/high capacity layered cathode material for lithium ion batteries - S. Gopukumar, C. Nithya, R. Thirunakaran and A. Sivashanmugam -0104NF2010:2439DEL2010.
4. A high voltage, high performance layered cathode material for lithium ion batteries - S. Gopukumar, C. Nithya, R. Thirunakaran and A. Sivashanmugam - 0103NF2010:2494DEL2010.
5. Process for 200 Ah Magnesium / meta-Dinitrobenzene battery for low temperature operation - N. Muniyandi, S. Gopukumar, A. Sivashanmugam, S. Vasudevan, D.P. Bhatt, R. Udhayan and K.I. Vasu -H01M 4/30.
6. Cathode material and lithium ion battery therefrom - Sukumaran Gopukumar, Chandrasekaran Nithya, Ramasamy Thirunakaran, Arumugam Sivashanmugam, Sundeeep Kumar Dhawan, Rakesh Behari Mathur, Priyanka Heda Maheshwari - US2014/0087257 A1; Mar 29, 2011, PCT/IB2011/000662 - EP2630686 B1; Mar 29, 2011; PCT/IB2011/000662 - WO2012/052810 A1; Mar 29, 2011 - CN103380529 A; Mar 29, 2011; PCT/IB2011/000662 - JP5707499.
7. Process for the preparation of high voltage nano composite cathode (4.9 V) for lithium ion batteries - S. Gopukumar, C. Nithya, R. Thirunakaran and A. Sivashanmugam - WO2012/052811 - JP5765644.
8. State of charge of silver-Zinc secondary battery by non-destructive method” – 2012.
9. An Electrochemical Process for the preparation of Metallic Lead Foam US Patent 2179US186.
10. Light Weight Lead Acid Battery using Metallic Lead Foam Electrodes Ref.No.- 0049NF15
11. MOF-incorporated nanocomposite polymer electrolytes for lithium batteries. (Indian Patent 2013 NF 0150).
12. Permselective separators for lithium sulfur batteries (Indian Patent filed) .
13. DaeHoon Park, Ragupathy Pitchai, Byung Gil Lim, and Guy Campet, “Process for preparing nanocrystalline manganese oxide having supercapacitor electrode property” Application number 10-2008-0033697, South Korea.
14. S. Suresh, Y. Munaiah, P. Ragupathy, Vijayamohan K. Pillai, S. Dheenadayalan, “A zinc bromine redox flow battery with improved performance” filed Indian patent (1788 DEL 2014).