Dr.(Mrs) Vatsala Rani J

Senior Scientist

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Bibliography

About

Dr. J.Vatsala rani, Senior Scientist, FluoroOrganic div., has total of 18 years of battery research experience, 5 years in DRDL,Hyd.,area of expertise was designed and development of alkaline , secondary and primary reserve batteries for defense applications. Six years in CECRI, karaikudi, one of the premier research labs of India working in the area of electrochemistry. In CECRI worked in the area of alkaline batteries and dry cells, also had exposure towards Lead acid battery and Lithium-ion battery technology.

Education

Schooling- St Ann's High school -Kazipet,Warangal. Telangana -1982

Intermediate - St Francis College -Secunderabad- 1984

Graduation (BZC) - Osmania University (OU) for women, Koti, Hyd. 1987

PG (Organic Chamistry) - Osmania University (Nizam College),Hyd., 1989

PhD - Electrochemistry - OU - Anodization of valve metals. 1997

Employment

Joined CSIR in the year 2002 as scientist in (CECRI)Central Electrochemical Research Institute, Karaikudi, worked in the area of design and development of alkaline zinc based batteries till 2008 September. 2008 october transferred to IICT Hyd., on personal request to fluoroOrganic Div., at IICT worked in the area of fluorination of carbon materials. Presently working in the area of up scaling of novel rechargeable Mg-ion battery.

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Research Interests

Present Research

Electrochemical fluorination of carbon materials.

Development of cathode materials for rechargeable Mg-ion and Al-ion batteries.

Upscaling of novel rechargeable Mg battery developed with natural graphite and ionic liquid electrolyte.

Past Research

Anodization of valve metals Hafnium and Niobium in suitable electrolytes and their kinetic studies.

Design development and qualification of primary reserve alkaline AgO/Zn batteries for aerospace application.

Development of electrode materials for alkaline AgO/Zn and MnO/Zn batteries.

Projects Involved

a) Development of stabilized zinc electrode for silver oxide zinc batteries.

b) Development of Ultra thin silver oxide electrodes for highrate batteries".

c) Development of suitable cost-effective alloys for Zn- MnO2 cells.

d) Development of rechargeable cathode materials for Magnesium ion battery (in progress).

c) Development of Innovative Technologies for Strategic Fluorochemicals (in progress)

Research Group Members

- Dr.J.Vatsala rani (Senior Scientist),
- Dr. B.Narasiah (Chief scientist)

- Dr. Aruna P(scientist)
- ,Dr.Pravin Likaar(Principal scientist)
- Dr. Anthony. E.(Senior scientist)

Publications

- Fluorinated Natural Graphite Cathode for Rechargeable Ionic Liquid Based Aluminum–Ion Battery . J. Vatsala Rani, V. Kanakaiah, Tulshiram Dadmal, M. Srinivasa Rao, S. Bhavanarushi Journal of The Electrochemical Society, 160 (10) A1781-A1784 (2013) This paper Cited in Nature - doi:10.1038/nature14340, reference ‘6’ This paper Cited in Nature - doi:10.1038/nature14340, reference ‘6’
- Rechargeable Magnesium Carbon-Fluoride Battery with Electrolyte Gel of Ionic Liquid and Low MolecularWeight Gelator V. Kanakaiah, M. Latha, B. Sravan, Aruna Palanisamy, J. Vatsala Rani Journal of The Electrochemical Society, 161 (10) A1586-A1592 (2014)
- Green Fluorination of Natural Graphite and its Application in Rechargeable Magnesium Ion Transfer Battery. J. Vatsala Rani, S. Bhavana Rushi, V. Kanakaiah, and S. Palaniappan Journal of The Electrochemical Society, 158 (9) A1031-A1035 (2011).
- . Electrodeposition and properties of nanocrystalline ZnO films prepared in the presence of anionic surfactant SDS and ionic liquid 1-butyl-3-methylimidazolium methylsulfate V. S. Vidhya, J. Vatsala Rani, A. Ratheesh Kumar, R. Thangamuthu K. R. Murali, M.Jayachandran J. Mater Sci: Mater Electron 05/2012; 22(9):1460-1465.
- Effect of mixed cations in synergizing the performance characteristics of PVA-based polymer electrolytes for novel category Zn/AgO polymer batteries—a preliminary study J. Vatsalarani & N. Kalaiselvi & R. Karthikeyan Ionics (2009) 15:97–105

Patents

- Patent no and date 1253DEL2014 (Prov. Date: 09/05/2014)

Awards

- Winner in DST- Lockeed Martin India innovation growth Program -2015 For innovating “ Futuristic safe eco-friendly rechargeable Mg battery”
- Winner in (DST- Lockeed Martin) Visit to USA (Texas University, Stanford Univ. and silicon Valley).-in 2015