

Studies on Aqueous Aluminum Air Battery with Surface Modified Anode

Kilari Lakshman Vedavyas^{1*}, Imran Karajagi² and K Ramya²

¹MGIT, India

²ARCI-CFCT, India

Fuel has always been one of the forces which are driving the world forward. Since the early days of human evolution, people have always been dependent on either renewable or non-renewable fuel as the source of energy. But what if that force have now turned into a threat? Most of the conventional fuels we now use give out a lot of pollution. We might not be able to see the world as it is now, if the pollution keeps on increasing with the same rate. Foreseeing the consequences, people have started shifting their focus on pollution free fuels such as fuel cells, Li-ion batteries, metal-air batteries and many more. Among them the metal-air batteries do grab a lot of attention due to their theoretical high energy density. My contribution towards this field of metal-air batteries is discussed in this paper. This study is a preliminary step in surface modification of anode for aluminium air batteries by using chiefly available polymers and hydrophobic coatings. The objective of this paper is to examine and compare the corrosion characteristics of bare aluminium with hydrophobic and polymer coatings on aluminium and analyze their ability to be used as an anode after modifying the surface for primary aluminium-air batteries. In this experiment sodium hydroxide (NaOH) solution as electrolyte and stainless steel mesh coated with MnO₂ catalyst as other electrode with the same active area as of anode to help in oxygen reduction reaction. The electrochemical behavior of both the bare and coated samples is examined with techniques such as weight loss method (to know corrosion rate), Potentiodynamic polarization, Electrochemical Impedance Spectroscopy and Galvenostatic (discharge) techniques with the help of a potentiostat.

Biography:

Lakshman Vedavyas Kilari is currently a Bachelor of technology-4th year (final year) student who has a great passion towards research, especially in the field of energy production. He earlier did a couple of minor-projects on foundry technology and iron making. He works for Indian society for technical education (ISTE) which helps students to enhance their technical skills. Being an enthusiast in material science due to the attractive advancements and the challenges offered by it, he is willing to pursue his career in it hoping that he can be a helping hand by solving any of those challenges.