

## عنوان مقاله:

Zeolite Based Air Electrodes for Secondary Batteries

## محل انتشار:

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## خلاصه مقاله:

In recent years, secondary batteries received considerable attention as promising technology for energy storage in combination with renewable energy sources. The oxidation of carbon in conventional air electrodes reduces the life of secondary batteries. One possible solution for overcoming this problem is the replacement of carbon material with zeolite. Zeolite is a natural or synthetic porous material with crystalline structure which provides the necessary gas permeability. The required hydrophobicity of the electrode is ensured by mixing zeolite with an appropriate amount of polytetrafluoroethylene following a specially developed procedure. The main purpose of the present research is to discover the optimum level of hydrophobicity (impregnation) of zeolite. Moreover, appropriate amount of PTFE will ensure better mechanical stability and long charge/discharge cycle life. The results from this study show that the replacement of carbon with zeolite in the gas diffusion layer is a promising direction for optimization of the bi-functional air electrode. The relationship between the particle size and the hydrophobicity of the electrode was found. It was found that the mechanical stability and hydrophobicity of the electrode improved with the replacement of the emulsion powder. The gas permeability is maintained in the norms, which guarantees the good performance of the electrode. More than 200 charge/discharge cycles were reached.

## کلمات کلیدی:

Carbon-free Air Electrodes; Zeolite; Gas Diffusion Electrode; Secondary Metal-air Batteries

