

Aloe vera Thin Film as an Active Layer in Organic Memory Device

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The usage of natural materials, such as Aloe vera [1-3], in electronic devices are able to resolve a few critical issues that are facing by mankind in this century, namely disposable of electronic waste that cause environmental issue and depletion of mineral resources needed for electronic device manufacturing. The ultimate goal is to produce “all-natural” electronic devices based on sustainable natural resources, which can be easily disposed. Limited works had been done by using honey, caramel, chicken albumen (egg white), silk, paper, leather, tobacco mosaic virus, porphyrin, and deoxyribonucleic acid (DNA) derived from salmon milt to produce active or passive layer of building blocks that are meant for electronic applications [4, 5]. In this work, extraction of natural Aloe vera gel has been formulated, processed, and fabricated into an active layer for memory device application. The processed and solidified Aloe vera with thickness of approximately 300 nm is sandwiched between two metal layer and sitting on a glass substrate. Effects of ethanol in the formulation, drying condition to form solidify layer, incorporation of gold and C60 nanoparticles in the Aloe vera, and type of metal electrodes used on the memory characteristics have been systematically characterized, studied and reported here.

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