

Accepted Manuscript

Resistive Switching Characteristics of Solution-Processed Organic-Inorganic blended Films for Flexible memory applications

Il-Jin Baek, Won-Ju Cho

PII: S0038-1101(17)30776-1

DOI: <https://doi.org/10.1016/j.sse.2017.10.030>

Reference: SSE 7343

To appear in: *Solid-State Electronics*



Please cite this article as: Baek, I-J., Cho, W-J., Resistive Switching Characteristics of Solution-Processed Organic-Inorganic blended Films for Flexible memory applications, *Solid-State Electronics* (2017), doi: <https://doi.org/10.1016/j.sse.2017.10.030>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Resistive Switching Characteristics of Solution-Processed Organic-Inorganic blended Films for Flexible memory applications

*Il-Jin Baek and Won-Ju Cho**

Department of Electronic Materials Engineering, Kwangwoon University, 447-1, Wolgye-dong, Nowon-gu, Seoul 139-701, Republic of Korea

*E-mail address: chowj@kw.ac.kr

Abstract

We developed a hybrid organic-inorganic resistive random access memory (ReRAM) device that uses a solution-process to overcome the disadvantages of organic and inorganic materials for flexible memory applications. The drawbacks of organic and inorganic materials are a poor electrical characteristics and a lack of flexibility, respectively. We fabricated a hybrid organic-inorganic switching layer of ReRAM by blending HfO_x or AlO_x solution with PMMA solution and investigated the resistive switching behaviour in Ti/PMMA/Pt, Ti/PMMA- HfO_x /Pt and Ti/PMMA- AlO_x /Pt structures. It is found that PMMA- HfO_x or PMMA- AlO_x hybrid switching layer has a larger memory window, more stable durability and retention characteristics, and a better set/reset voltage distribution than PMMA layer. Further, it is confirmed that the flexibility of the PMMA- HfO_x and PMMA- AlO_x blended films was almost similar to that of the organic PMMA film. Thus, the solution-processed organic-inorganic blended films are considered a promising material for a non-volatile memory device on a flexible or wearable electronic system.

Keywords: ReRAM, Organic-Inorganic, Blended film, Solution-process, Flexible electronics

Download English Version:

<https://daneshyari.com/en/article/7150596>

Download Persian Version:

<https://daneshyari.com/article/7150596>

[Daneshyari.com](https://daneshyari.com)