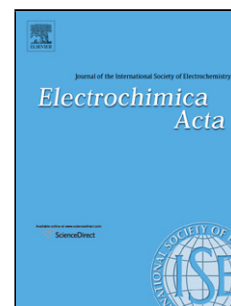


## Accepted Manuscript

Title: Novel Method to Improve Performance of  
Dye-sensitized Solar Cells Based on Quasi-solid Gel-Polymer  
Electrolytes

Author: E.N. Jayaweera C.S.K. Ranasinghe G.R.A. Kumara  
W.M.N.M.B. Wanninayake K.G.C. Senarathne K. Tennakone  
R.M.G. Rajapakse O.A. Ileperuma



PII: S0013-4686(14)02386-X  
DOI: <http://dx.doi.org/doi:10.1016/j.electacta.2014.11.156>  
Reference: EA 23828

To appear in: *Electrochimica Acta*

Received date: 25-8-2014  
Revised date: 24-11-2014  
Accepted date: 25-11-2014

Please cite this article as: E.N.Jayaweera, C.S.K.Ranasinghe, G.R.A.Kumara, W.M.N.M.B.Wanninayake, K.G.C.Senarathne, K.Tennakone, R.M.G.Rajapakse, O.A.Ileperuma, Novel Method to Improve Performance of Dye-sensitized Solar Cells Based on Quasi-solid Gel-Polymer Electrolytes, *Electrochimica Acta* <http://dx.doi.org/10.1016/j.electacta.2014.11.156>

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.

# Novel Method to Improve Performance of Dye-sensitized Solar Cells Based on Quasi-solid Gel-Polymer Electrolytes

E. N. Jayaweera<sup>a,b</sup>, C. S. K. Ranasinghe<sup>a,b</sup>, G. R. A. Kumara<sup>b\*</sup>, W. M. N. M. B. Wanninayake<sup>a,c</sup>,  
K. G. C. Senarathne<sup>a,b</sup>, K. Tennakone<sup>d</sup>, R. M. G. Rajapakse<sup>a,b</sup>, O. A. Ileperuma<sup>a,b</sup>

<sup>a</sup>Postgraduate Institute of Science, University of Peradeniya, Peradeniya Sri Lanka.

<sup>b</sup>Department of Chemistry, Faculty of Science, University of Peradeniya, Sri Lanka.

<sup>c</sup>Department of Physics, Faculty of Science, University of Peradeniya, Sri Lanka.

<sup>d</sup>Department of Physics, Georgia State University, Atlanta, USA.

## Graphical abstract

fx1

## Highlights

Novel method has been introduced to improve the performance of dye-sensitized quasi-solid gel polymer electrolyte solar cells.

The new concept used here is based on the fact that a better pore-filling has been obtained by filling the pores with the liquid electrolyte but its evaporation and the leakage problems have been circumvented by sealing the pores with hot-pressed PAN polymer gel electrolyte.

N719 dye is used as the sensitizer.

When only PAN gel polymer electrolyte is used, the conversion efficiency is 5.2%.

When the pores are filled with the usual liquid electrolyte and sealed with hot-pressed PAN gel electrolyte, the conversion efficiency is increased to 8.4%.

This new configuration has improved properties when compared to those of gel-polymer electrolyte-based DSCs.

Download English Version:

<https://daneshyari.com/en/article/6612495>

Download Persian Version:

<https://daneshyari.com/article/6612495>

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