FORM 2

THE PATENTS ACT, 1970
(39 of 1970)
AND
THE PATENTS RULES, 2003

COMPLETE SPECIFICATION

(See Section 10; rule 13)

TITLE OF THE INVENTION

"IMPROVED METHOD OF PRODUCING TWO OR MORE THIN-FILM-BASED INTERCONNECTED PHOTOVOLTAIC CELLS"

APPLICANT

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The following specification particularly describes
the invention and the manner in which
it is to be performed

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CLAIMS

What is claimed is

1. A method of producing two or more thin-film-based interconnected photovoltaic cells comprising the steps of:

a) providing a photovoltaic article comprising: a flexible conductive substrate, at least one photoelectrically active layer, and a top transparent conducting layer;

b) forming one or more first channels through the flexible conductive substrate to expose a portion of the photoelectrically active layer;

c) applying an insulating segment to the conductive substrate and spanning the one or more first channel;

d) forming one or more second channels off set from the one or more first channels through the photoelectrically active layer to expose a conductive surface of the flexible conductive substrate;

f) forming one or more third channels off set from both the first channels and the second channels, through the top transparent conducting layer and to the photoelectrically active layer; and

g) applying an electrically conductive material above the top transparent conducting layer and in the second channels, thus producing two or more interconnected photovoltaic; cells;

wherein the one or more first channels are formed first.

2. The method according to claim 1, further comprising the step of at least partially filling the at least one third off-set channels with an electrically insulating material.

3. The method according to claim 2, wherein the electrically insulating material comprises silicon oxide, silicon nitride, titanium oxide, aluminum oxide, non-conductive epoxy, silicone, polyester, polyfluorene, polyolefin, polyimide, polyamide, polyethylene or combinations of the like.

4. The method according to any of claims 1 to 3, wherein the insulating layer comprises polyester, polyolefin, polyimide, polyamide, polyethylene.

5. The method according to any of the previous claims, wherein the forming step is carried out by scribing, cutting, ablating, or a combination thereof.

6. The method according to any of the previous claims, wherein the photovoltaic article cell is in roll form.

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7. The method according to any of the previous claims, wherein the third off-set channels of the forming step (f) extend at least partially through the photoelectrically active layer.

8. The method according to any of the previous claims, wherein the width of the channels of the forming step are from 10 to 500 microns.

9. The method according to any of the previous claims wherein the one or more first channels, the one or more second channels and the one or more third channels are formed by a scribing process.

10. The method according to any of the previous claims wherein the one or more first channels, the one or more second channels and the one or more third channels are formed by a mechanical or laser scribing process.

11. A photovoltaic article formed by the method of any one of claims 1 to 10.

Dated this 17 day of June 2014

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