

# EXPRESSION OF INTEREST FOR TECHNOLOGY TRANSFER

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Spray Coated Fluorine doped Tin Oxide for transparent  
conducting electronic applications

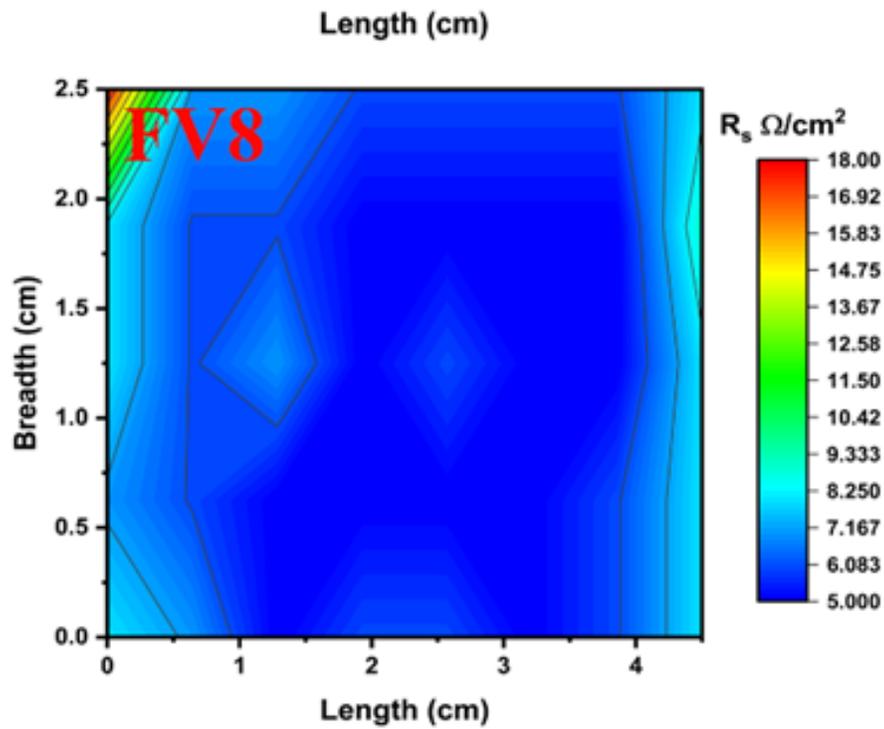
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Patent Application & priority date  
/ Patent Number & date of patent: NA

## Brief description of the invention (Abstract):

The invention pertains to the development of a process recipe that can be transferred to any electronics industry that is into the manufacturing of solar cells, display devices, or sensors. The technology pertains to a material that can be spray coated onto any substrate and be transparent and conducting in behavior.

# Graphical abstract:



Sheet resistance contour map of FTO films



Photos of different substrates a) Photo of a  $5 \times 2.5 \text{ cm}^2$  commercial FTO substrate b) Photo of an in-house optimized FTO substrate ( $4.5 \times 2.5 \text{ cm}^2$ ).

## Novelty of the invention:

We have successfully developed an in-house method for the preparation of conductive transparent coatings based on fluorine-doped tin oxide material using a spray coating method. We are capable of transferring a process by which thin films with sheet resistivity of  $6 \Omega/\text{cm}^2$  can be commercially available for the industry.

## Utility of the invention:

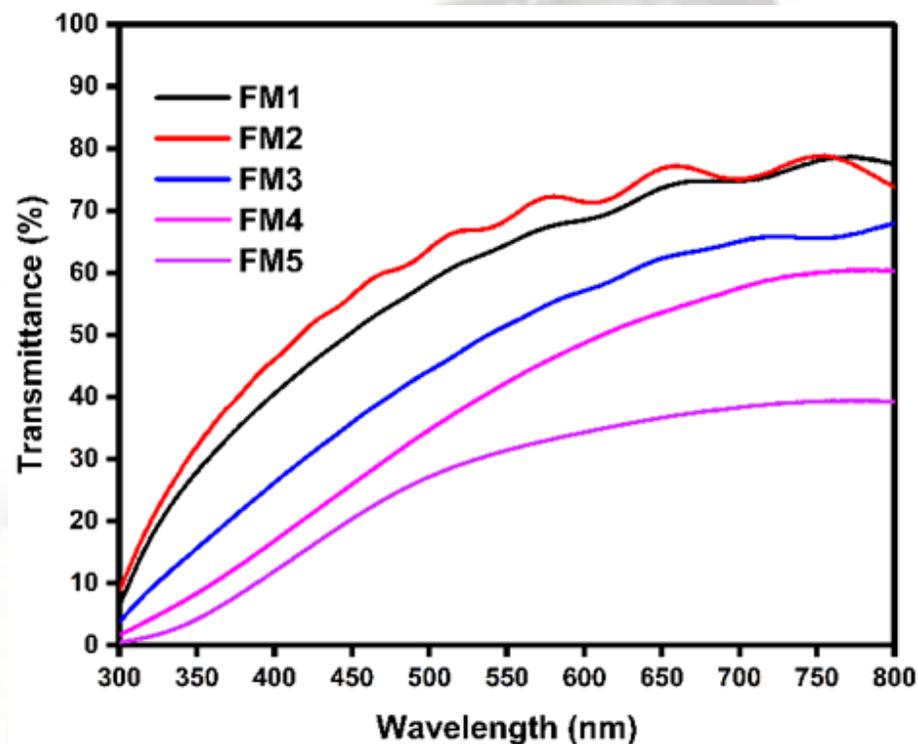
Fluorine-doped tin oxide (FTO) belongs to the class of transparent conducting oxide (TCO) materials widely used in the field of displays, solar cells, sensors, and FET (Field Effect Transistors). Its high conductivity and transparency make it ideal for creating electrodes in thin film solar cells. Its unique combination of transparency and conductivity makes it indispensable in driving technological innovations across the electronics industry.

Non-obvious nature of the invention:

The inventors claim to have a process recipe that can be transferred. The product is already available in the market and the inventors come up with an alternate economical technology.

# Results: (proof for clause 1) Basic data only

<i>Sample</i>	<i>Resistivity</i> <i>(<math>\Omega cm</math>)</i> <i>(<math>10^{-3}</math>)</i>	<i>Mobility</i> <i>(<math>cm^2 V^{-1} s^{-1}</math>)</i>	<i>Carrier</i> <i>Concentration</i> <i>(<math>cm^{-3}</math>)</i> <i>(<math>10^{19}</math>)</i>
<i>FM1</i>	1.17	11.9	4.89
<i>FM2</i>	1.05	11.76	50.66
<i>FM3</i>	0.47	31.06	71.32
<i>FM4</i>	0.57	4.13	18.44
<i>FM5</i>	1.85	2.31	8.37



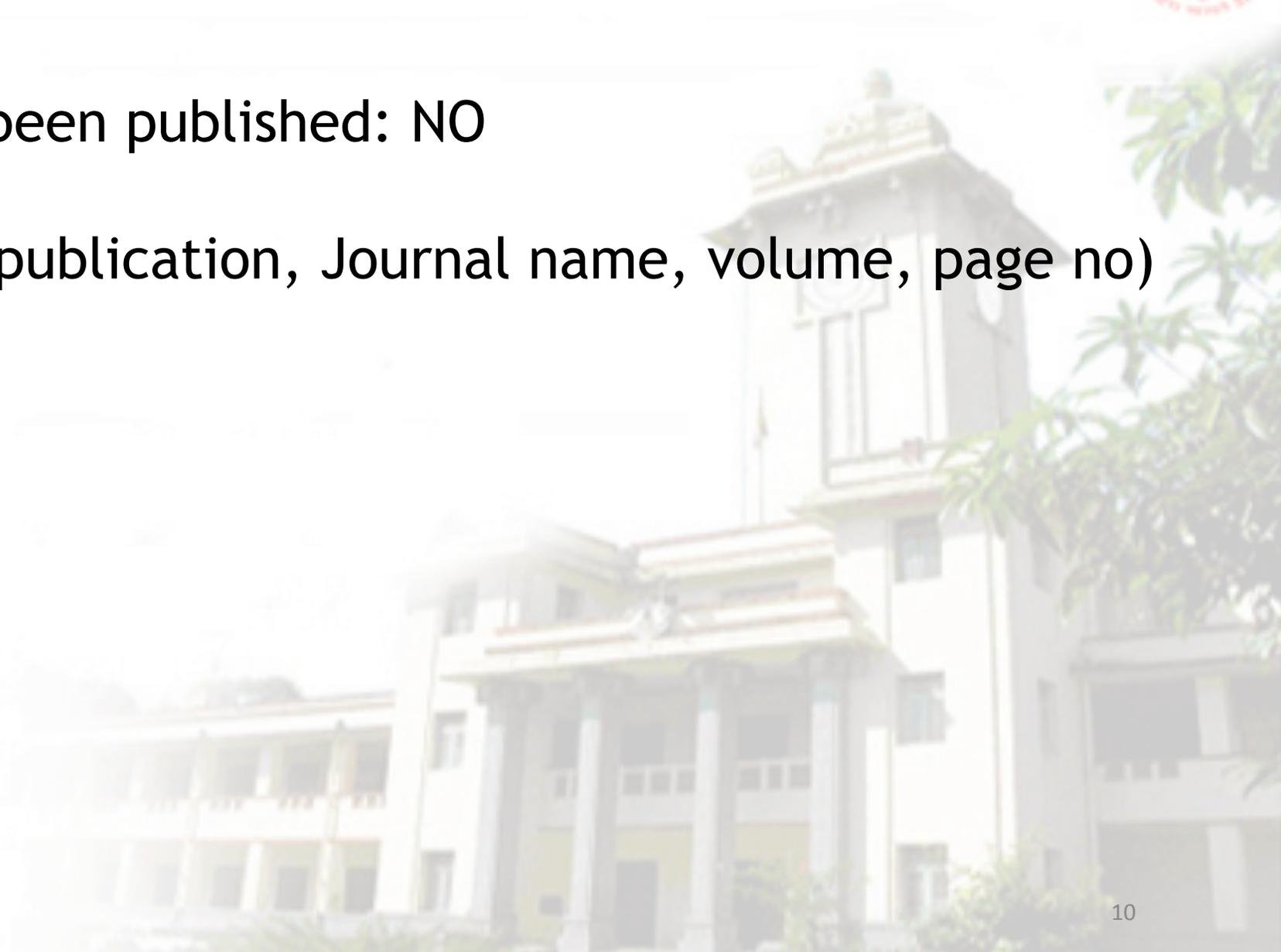
## Fields where the invention finds application:

- Solar Cells
- Display devices
- Sensors



Whether the work has been published: NO

(Authors, year, title of publication, Journal name, volume, page no)



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