

# R&D of High-performance Packaging Technology and LSI Application Utilizing Polymer Nano-composite

## < Program for Fostering Regional Innovation (Global Type) >

### Project Team

#### Project Manager

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#### Enterprises

Fuji Electric Advanced Technology Co., Ltd.

NITTO DENKO CORPORATION

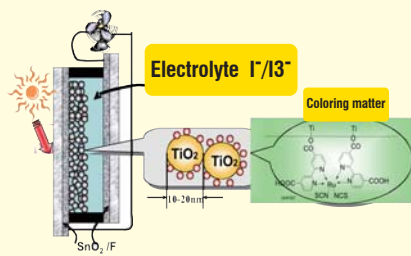
Toshiba Corporation Semiconductor Company

### Purpose of the Research

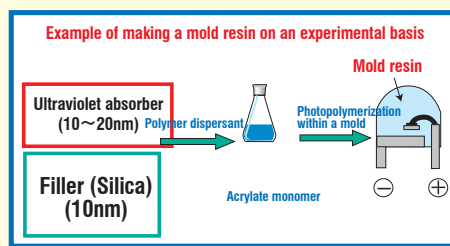
1. We will realize a photoelectric conversion element system with a low-cost electricity storage function.
2. We will develop a long-life and low-price mold resin for white LED.
3. We will develop an high-density mounting electronic circuit board for high density assembly by utilizing a nanocomposite technology.

### Summary of the Research

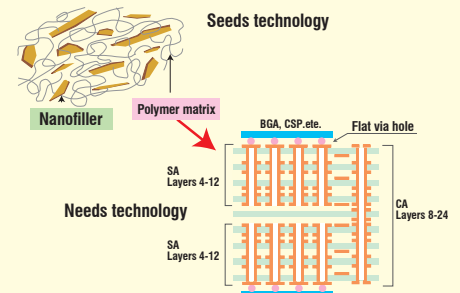
1. Realize a low-cost ultrasmall power source, which consists of a dye-sensitised solar cell (DSC) and a secondary battery, which is expected to have a high photoelectric conversion characteristic in doors.



2. Develop a transparent resin which has a high visible light transmissivity and is heat resistant and with low expansibility by highly dispersing an ultraviolet absorber inside the resin.



3. Develop a high electric field resistant printed circuit board for high density assembly which owns high heat endurance and high thermal conductance with low ion migration property.

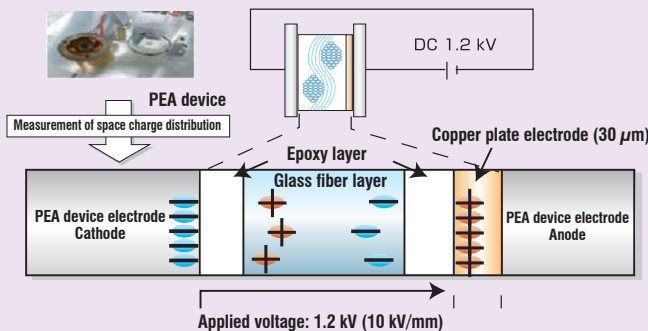


### Results of the Research

1. The efficiency of photoconversion efficiency for fluorescent light has improved to 30% (Cell size: 5 mm x 5 mm). Succeeded in maintaining the high efficiency after solidifying the nonvolatile electrolyte.

2. We highly disperse the colloidal silica inside the resin. And we also disperse an inorganic ultraviolet absorber in the transparent resin.

3. We found a possibility to make a printed circuit board thinner by suppressing the ion migration and the space charge formation by utilizing the nanocomposite technology.



### Prospective Fields of Application

1. Small-sized photoelectric conversion element for LSI



Stationary sensor node

2. Lighting for household use or use in car

3. Electronic printed circuit board  
Flexible board  
IGBT power module



Information

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