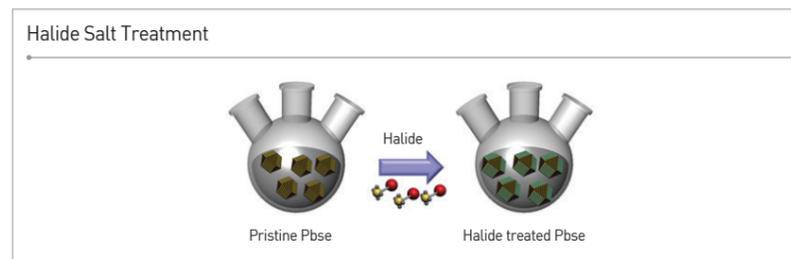


# High-stability Quantum Dot Production Technology

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⇒ Structuring and gripping technology for a material with halide salt protective layer in the quantum dots



## Client / Market

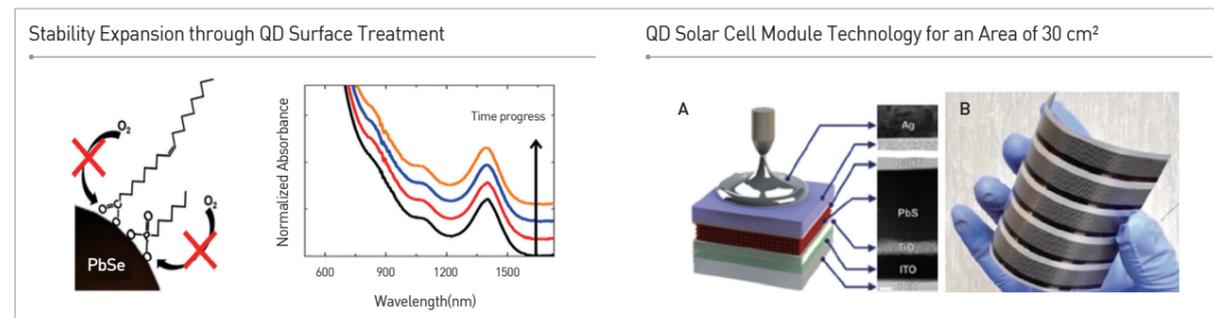
- Quantum dot manufacturer, quantum dot film manufacturer, quantum dot display manufacturer

## Necessity of this Technology

- Current, research on utilization of QD photovoltaic devices is conducted actively.
  - Display field → Full-scale commercialization began (Samsung)
  - QD photovoltaic device → Photon to electron conversion efficiency over 12%
- High-stability QD synthesis development is needed to expand fields for application of QD-based photovoltaic devices.

## Technical Differentiation

- Can provide high-efficiency QD and QD with great stability.
- The properties maintain after made as a device that the faulty rate of device decreases.



## DESIRED PARTNERSHIP

Technology Transfer

Licensing

Joint Research

Other



## TECHNOLOGY READINESS LEVEL [TRL]

Research, basic explanation | Project concept or idea development | Technology idea verification | Prototype development | Trial product production/evaluation in similar environment | Pilot field demonstration | Development and optimization of commercial model | Commercial product demonstration | Mass production and initial market launch

## Excellence of Technology

- Developed high-stability QD synthesis using cation exchange reaction
- Successful high-stability QD synthesis through phosphonic acid treatment on QD surface
- Production on inorganic ligand QD solar cell using a multi-scale structure-based iodide ion
- Successful production of a solar cell with a photon to electron conversion efficiency of 12.3%
- Published 10 SCI papers including Adv. Mater., J. Am. Soc. Chem., ACS Nano

## Current Intellectual Property Right Status

### PATENT

- Quantum Dot and Manufacturing Method of the Same (KR1486529)
- Quantum Dot Manufacturing Apparatus (KR1295543)
- Quantum Dot and Manufacturing Method of the Same (KR1203173)
- Method for Preparing Precursor P (SiMe<sub>2</sub>-tert-Bu)<sub>3</sub> for Producing InP Quantum Dot (KR1043311)
- Quantum Dot Film Coating Apparatus and Driving Method Thereof (KR1057830)
- The Method of Highly Conductive Quantum Dot Film and Highly Conductive Quantum Dot Film Prepared Thereby (KR1051083)
- Quantum Dot Having Improved Electron Transporting Performance and Method for Manufacturing Thereof (KR0971197)
- Stabilized Quantum Dots with Halogen Salt and Method for Manufacturing Thereof (US 14/677,999)