Various achievements of TIA

- **Light/quantum measurement**
  - Innovative structural materials

- **Nano-GREEN**
  - Battery for EV

- **Biotechnology / healthcare**
  - Advanced medical care

- **MEMS**
  - Infrastructure monitoring

- **Nanoelectronics**
  - Electronics/Communication network

- **Carbon nanotubes (CNT)**
  - Advanced functional materials

- **Power electronics**
  - High efficiency power devices

**Basic research**

- Multicore multimitter advanced measurement
- X-ray absorption fine structure computed tomography
- X-ray emission spectroscopy imaging
- Mechanical luminescence fracture dynamics imaging
- Innovation of sensing technology with SQI
- ND2 by cosmic-ray muon radiography

**Applied research & development**

- Battery recharging battery
- Lithium air rechargeable battery
- Bottom-up synthesis of nanoelectronic nanomaterials
- Perovskite solar cell
- Discovery of a novel catalyst for fuel cells
- Growth of single crystal thin film of all solid-state battery materials
- Development of thin film characterization of red blood cell microscopic change and battery reaction

**Social implementation**

- Alps Bio Co., Ltd. established (Mar. 2014)
- Ultra-tin three-axis force sensor by Touchence Corp.
- Social infrastructure monitoring
- Social infrastructure monitoring
- Ultra-low power wireless sensor node
- SaPo-powered MEMS vibration sensor
- R72 inch MEMS Fabrication line
- Mass production process for piezoelectric MEMS
- R&D of piezoelectric MEMS process

**Commercialization**

- Alps Bio Co., Ltd. established in April 2017
- Demonstration experiment in space (2019)
- Atom switch integrated Si-Li
- Ultra-low power wireless sensor node
- OEC Nanotubes’ PPA engineering sample
- Social infrastructure monitoring
- Ultra-low power wireless sensor node
- SaPo-powered MEMS vibration sensor
- R72 inch MEMS Fabrication line
- Mass production process for piezoelectric MEMS

**Demonstration**

- Alps Bio Co., Ltd. established (Mar. 2014)
- Ultra-tin three-axis force sensor by Touchence Corp.
- Social infrastructure monitoring
- Ultra-low power wireless sensor node
- SaPo-powered MEMS vibration sensor
- R72 inch MEMS Fabrication line
- Mass production process for piezoelectric MEMS

**Power electronics**

- High efficiency power devices
- SIC power module for Shinkansen N700 by Fujielectric Co., Ltd.

- SIC devices production-line with 4" wafers in the Matsusima Works of Fujielectric Co., Ltd.

- Carbon nanotube capacitor development project

- Ultra-high voltage devices KST, 16kV/100mA 13kV

- High-voltage switching devices (3.3kV planar MOSFET structure)