INOEL Yamagata University Innovation Center for Organic Electronics

Research Group for Flexible Technologies (Nakada/Furukawa/Yuki/Koden)

山形大学 Yamagata University

Developed technology

YU-FLEC

TFE (Thin Film Encapsulation) Technologies for OLEDs

We develop TFE (Thin Film Encapsulation) technologies for OLED devices, using organic resins developed by TOYOCHEM CO., LTD. (TOYO INK SC HOLDINGS group).

Technological features

- Advantages of "Non-solvent UV-IJ resin ink" developed by TOYOCHEM"
  - To support SiNx barrier layer
  - UV cure type (non-solvent)
  - Applicable to ink-jet

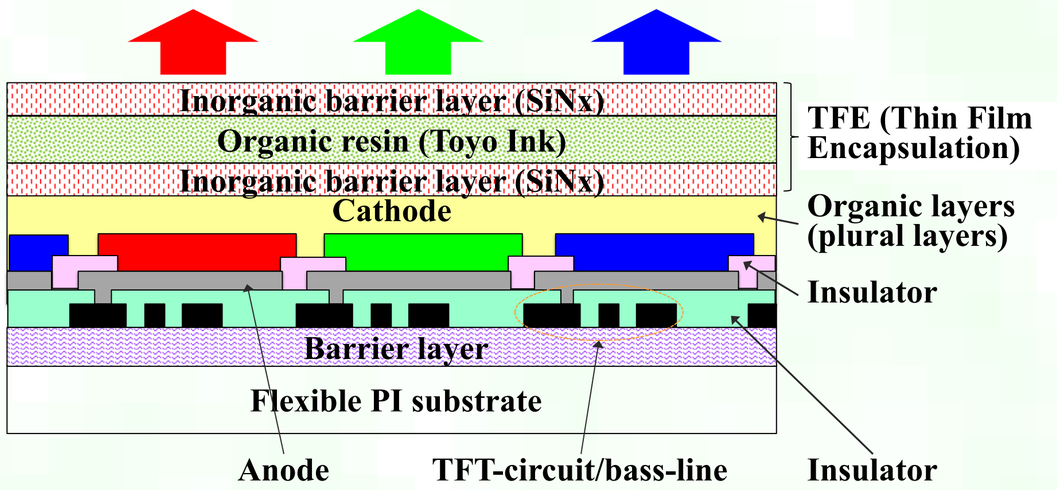
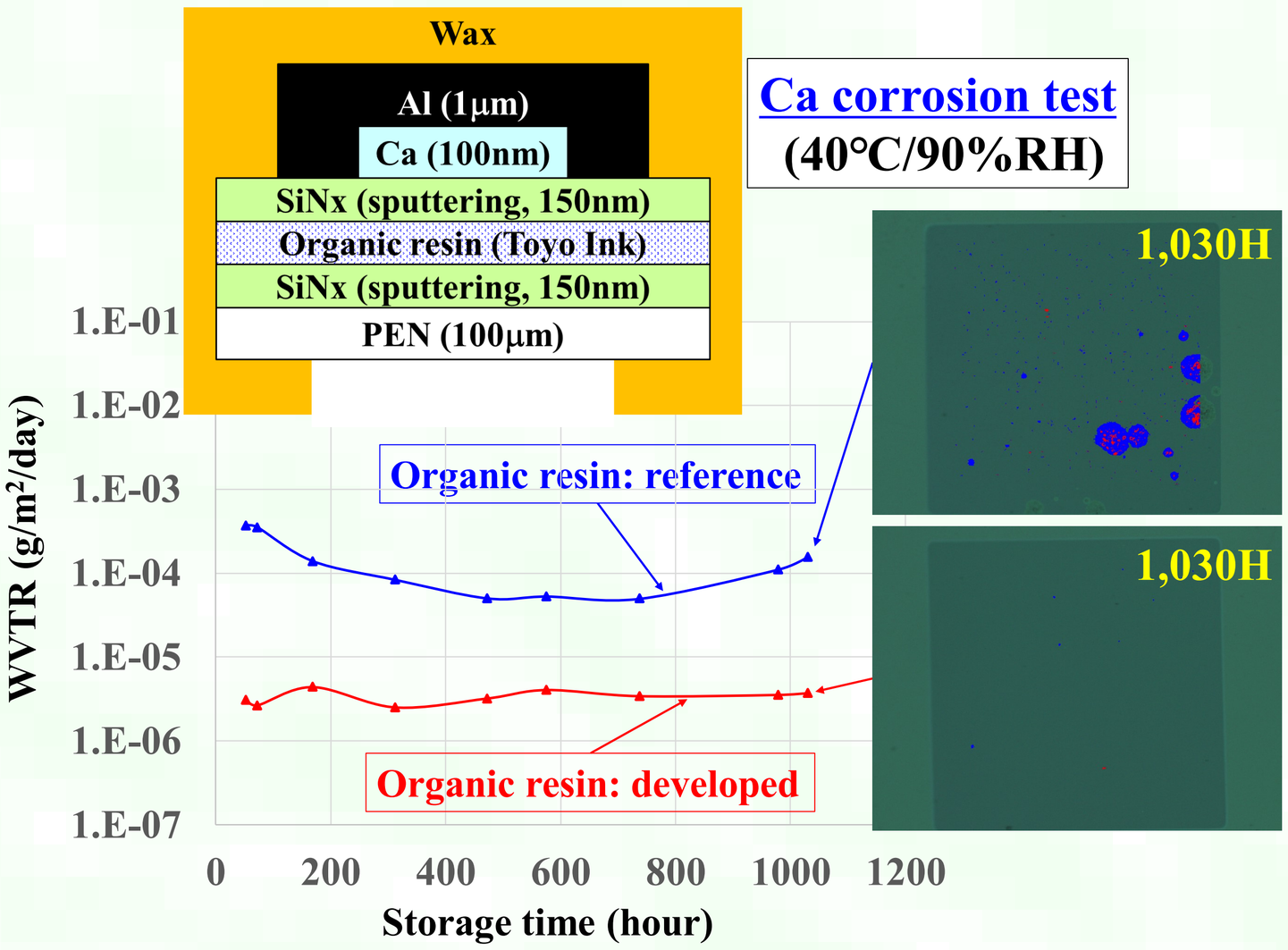


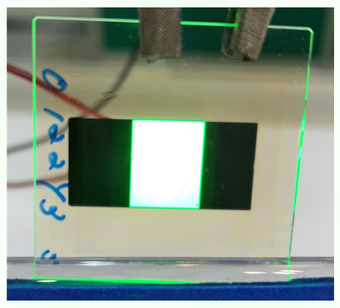
Image of OLED with TFE

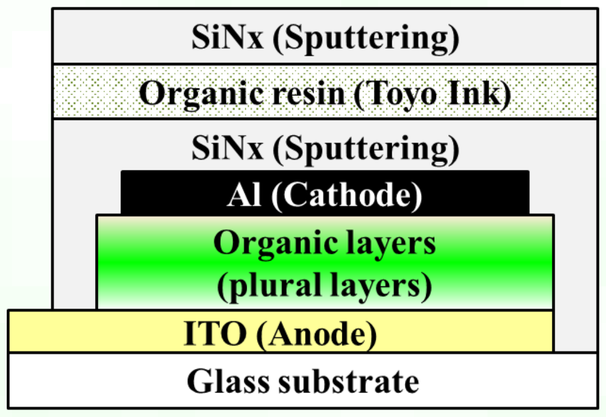
Developed technologies

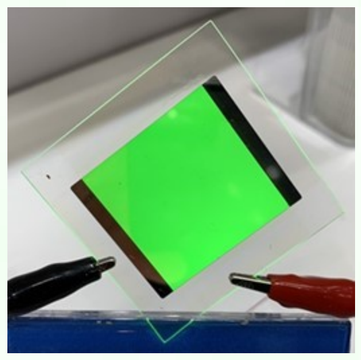
- TFE structure with high gas barrier property
  - TEF with "Non-solvent UV-IJ resin ink" developed by TOYOCHEM
  - No actual damage after storage test of 1,000 hours under 40°C/90%RH
  - WVTR (Water Vapor Transmission Rate): order of 10^{-6}g/m^2/day (40°C/90%RH)

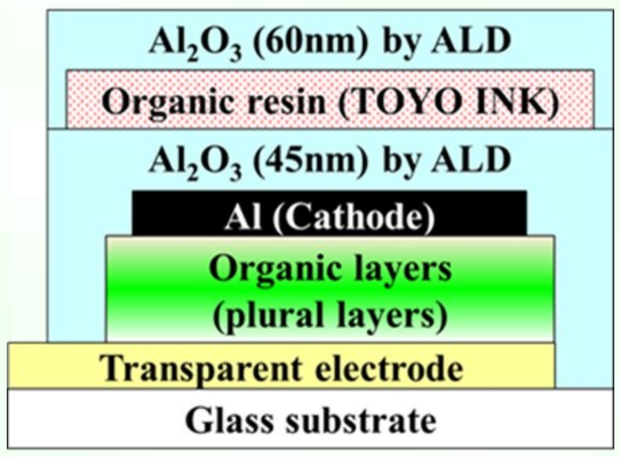


- OLED device with the developed TFE structure









Collaboration TOYOCHEM CO., LTD.

Related program

- Yamagata University Flexible Electronics Consortium for Academia-Industry Cooperation (YU-FLEC) [Jan. 2018～Mar. 2023].
- MEXT: Construction Program of Open Innovation Organization [FY2018～FY2022].

Publication / Commercialization

- Yamagata University; "JFlex2020" (Jan. 2020 / Tokyo); "JFlex2019" (Jan. 2019 / Tokyo).
- The developed results have been applied to LIORESIT™ NSP 800 series (UV Curing/ IJ printing) of TOYOCHEM CO., LTD.