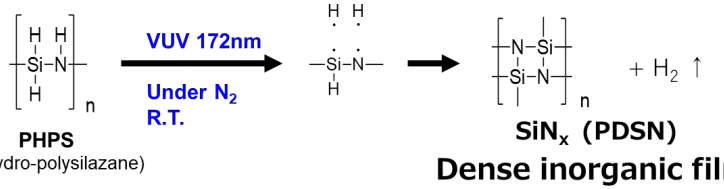
Research on ultra-high barrier fabricated by wet process

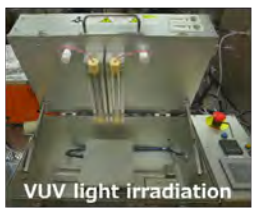
Professor Yoshiyuki Suzuri

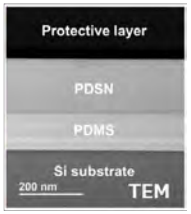
Ultra high-barrier structure by wet process



PHPS
(Perhydro-polysilazane)

SiN_x (PDSN)
Dense inorganic film





ACS Appl. Mater. Interfaces, **11**, 43425 (2019)
ACS Appl. Nano Mater. **4, 10,** 10344-10353 (2021)
***Advanced Materials Interfaces*, 2201517 (2022)**

Flexible and transparent OLED panel

Content: **Next Generation Wet-processed Thin Films**
We are researching and developing highly functional thin films by wet processes, aiming for environmentally friendly (GX) and digital manufacturing (DX). We achieved the world's highest performance of water vapor barrier film by wet process (2022). This technology will contribute a wide range of industries, including flexible devices and the packaging field. We are also developing OLED panels using printing processes. We are promoting research on new thin films, both organic and inorganic, focusing on wet processes for next generation technology.

Appealing point: **Ultra high barrier with low cost and low environmental impact**
We are conducting research on dense inorganic films from soluble precursors by irradiation of ultraviolet (VUV) light. We have succeeded in obtaining dense SiN_x films. The water vapor permeability is in the 10^{-5} g/m^2/day range, and the barrier performance is comparable to that of SiN_x films formed by vacuum deposition. This innovative technology can be used not only for OLEDs, but also for devices and packaging applications.

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