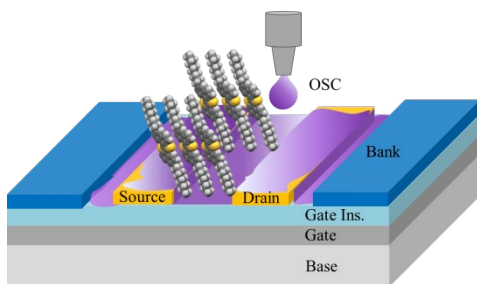


# Research on High-Density Solution-Processed Organic Thin Film Transistor

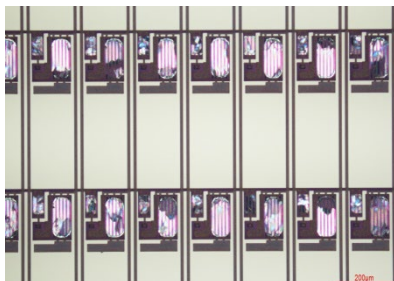
## Professor Makoto Mizukami

OTFT using ink jet process

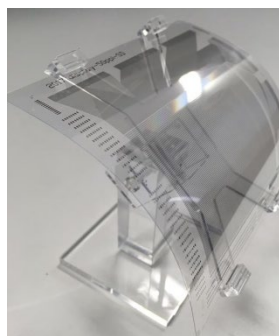


All solution-processed backplane

80,000 OTFT formation  
Printed electrodes  
Minimum Line/Space  
5 $\mu$ m/5 $\mu$ m



Flexible color OLED driven by OTFTs



Flexible all solution-processed backplane

Content:

Due to their flexibility and ability to be coated at low temperatures, organic semiconductors have been actively used in organic thin film transistors (OTFTs). The mobility of conventional OTFTs has been at around that of a-Si, but we have recently succeeded in developing an extremely high-performance OTFTs with a hole mobility of 16 cm<sup>2</sup>/Vs using novel organic semiconductor materials and polymer-based gate insulators. We have been engaged in the development of a high-density OTFTs (100ppi) array; as well as processes which combine photolithography and printing methods, or fully solution-based processes which involve only printing and coating. As a result, we have succeeded in developing flexible-color organic EL displays which use OTFTs.

Appealing point:

We have been engaged in research on organic devices (e.g., high-density solution-processed OTFTs and flexible displays which use fine printing / processing techniques of organic / inorganic materials) in collaboration with universities and industry and seek to develop the electronics industry.

Yamagata University Innovation Center for Organic Electronics  
Research Interest : Organic thin film transistor  
Flexible device

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