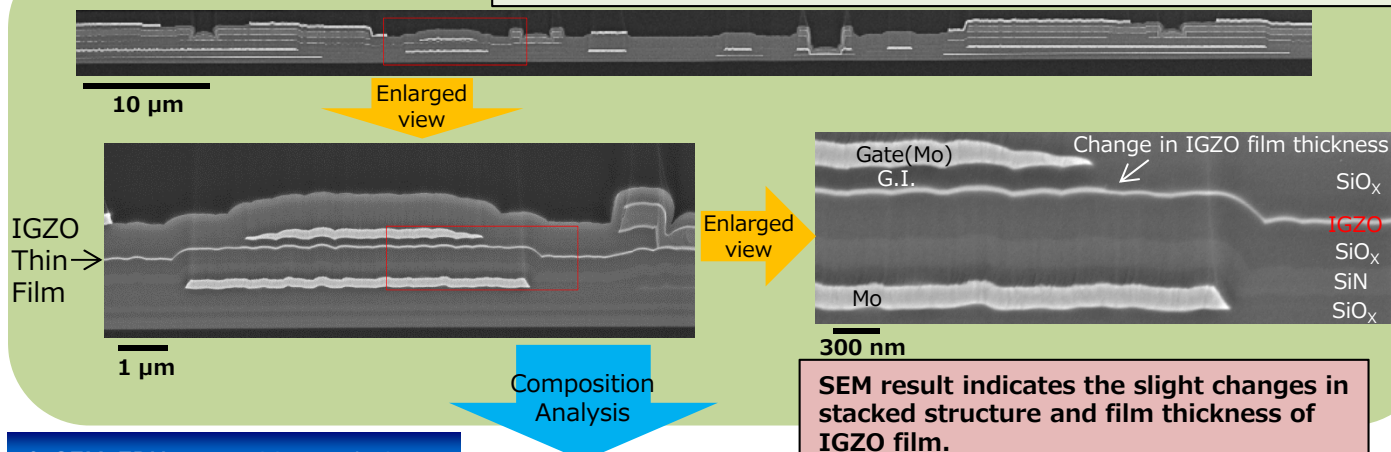


# SEM, EDX and SCM evaluation of IGZO-TFT

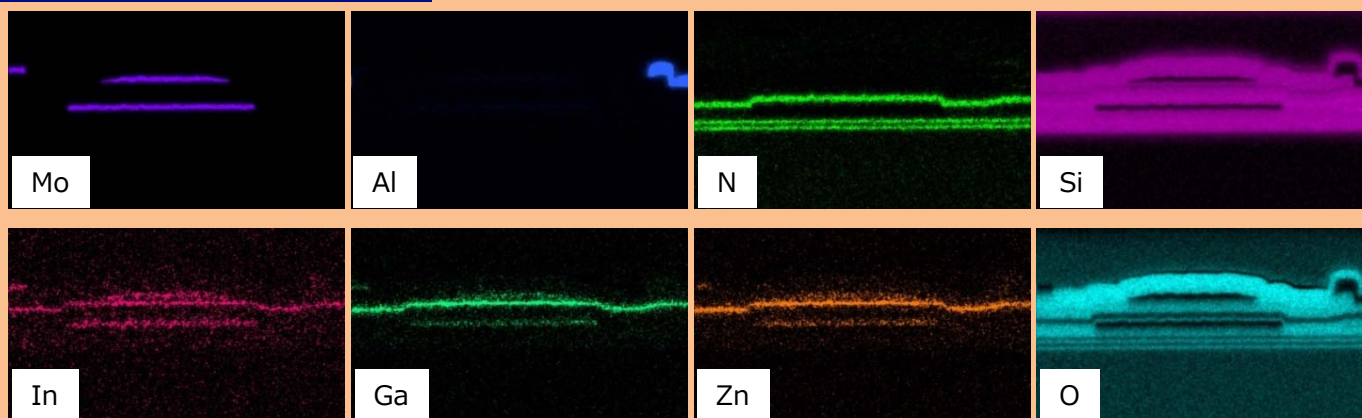
Amorphous IGZO (In-Ga-Zn-O) semiconductor has been researched and developed as an one of candidates for next-generation TFTs and other electronic devices because of its excellent properties such as high channel mobility and low leakage current. We introduce a case study of the morphological observation and carrier distribution of IGZO-TFT cross sections of commercial products using SEM-EDX and SCM.

## 1. Cross-sectional SEM observation

Wide range observation from mm to nm by the optimization of sample preparation.



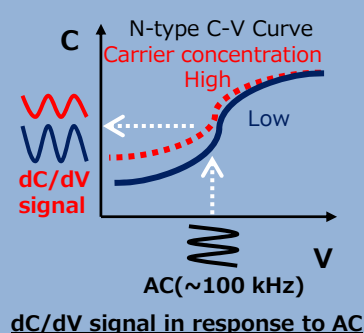
## 2. SEM-EDX composition analysis



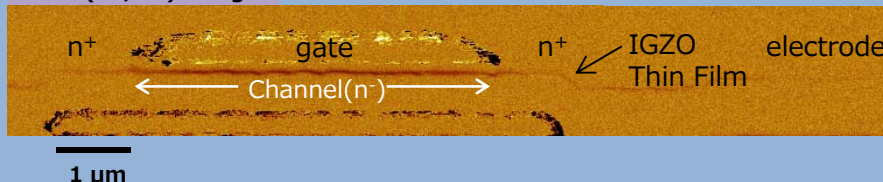
※The In, Ga and Zn signals in the Mo electrode are due to the background effect.

Data measured with optimized sensitivity and spatial resolution

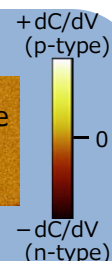
## 3. Application of the SCM method to IGZO thin film



### SCM (dC/dV) Image



SCM enables to evaluate 2D carrier distribution in IGZO films with a thickness of 50 nm or less. The IGZO film is an n-type in all regions and a decrease in carrier concentration (n<sup>-</sup>) was observed in the channel region under the gate.



Evaluating the final product is very important for yield improvement, quality check and patent searches.