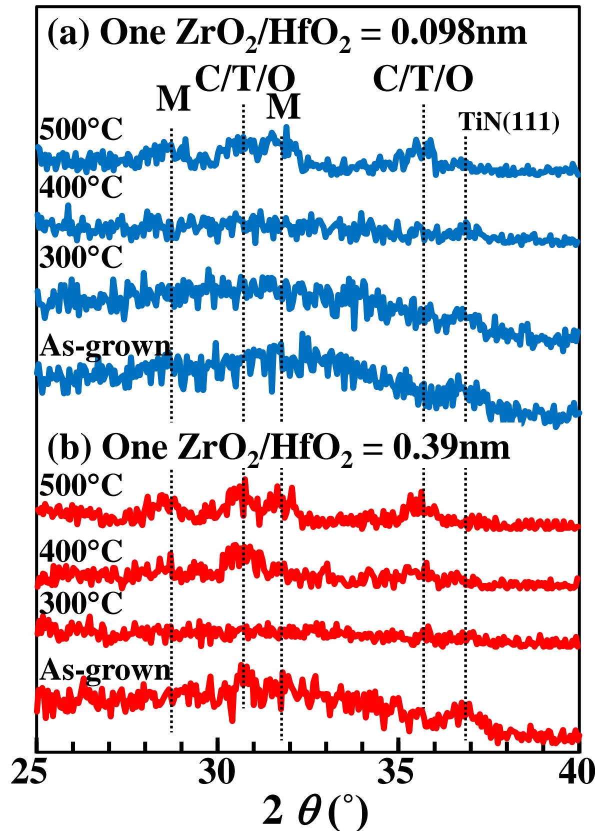

Fig.1. XRD patterns of one ZrO_2/HfO_2 layer thickness of (a) 0.098nm and (b) 0.39nm in the ZrO_2/HfO_2 laminate films (10nm).

One ZrO_2/HfO_2 thickness (0.39nm) showed low temperature crystallization at 400°C compared to the (0.098nm)at 500°C.
The structure was monoclinic (M) and cubic/tetragonal/orthorhombic (C/T/O).

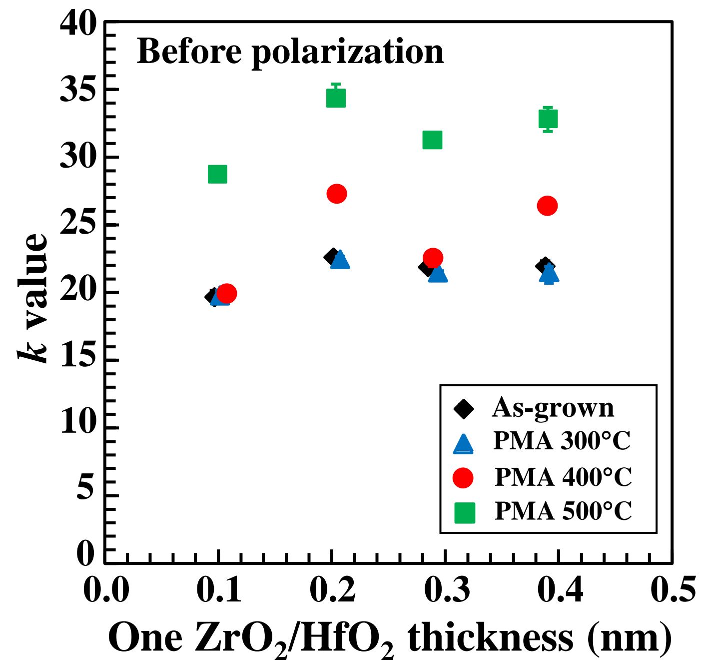

Fig.2. k values as a function of the thickness of one ZrO_2/HfO_2 layer for TiN/HZO (ZrO_2/HfO_2=1/1)/TiN capacitors.

The capacitors with one ZrO_2/HfO_2 layer (≥0.20nm) showed larger *k* values compared to the one ZrO_2/HfO_2 layer (0.098nm).