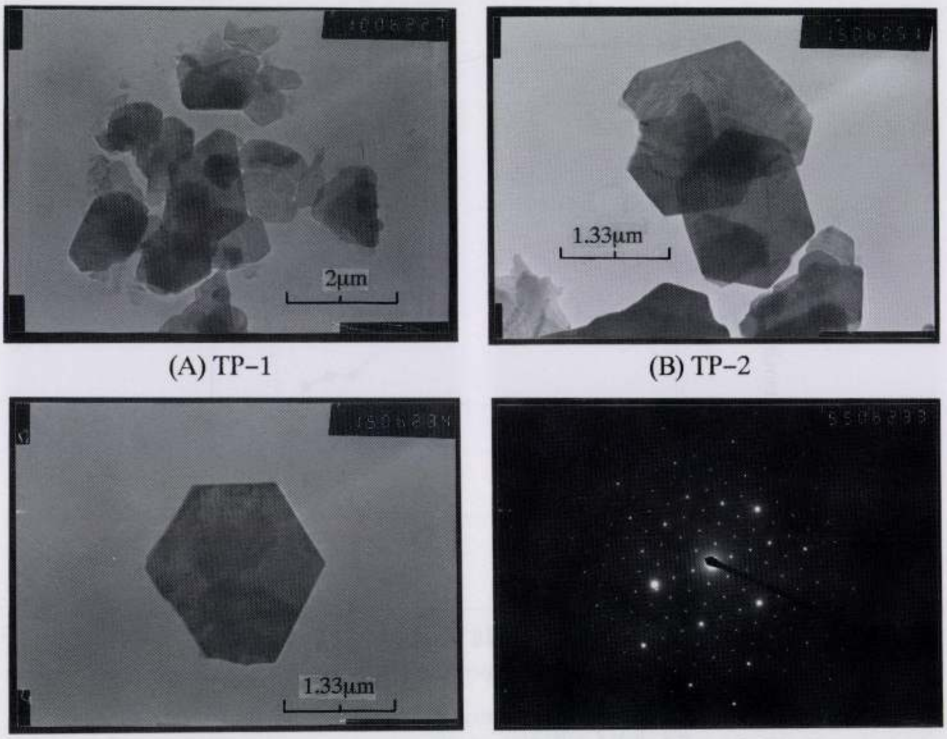
900°C showed that talc mostly transformed into micas, but $KMgF_3$ still persisted. Heat treatments at 1000°C led to the decomposition of $KMgF_3$, which may be caused by the crystallization of micas with considerable structural rearrangement.

According to the above thermogravimetric and X-ray diffraction analyses, fluorine micas are mainly formed by the transformation from talc without entire disruption of the original atomic arrangement, which means that OH^- in the talc structure is converted to F^- in the mica structure, while potassium ion intercalates into the interlayer site of talc. The charge balance of the synthetic fluorine micas is mainly maintained by the loss of Mg^{2+} from the octahedral site and partly the replacement of Si^{4+} by Mg^{2+} in the tetrahedral site (Tateyama et al., 1990).

Electron micrographs of fluorine micas are shown in Figure 4. Fluorine micas are mainly in the form of hexagonal platelets with regular outlines, but, the shape of talc used as raw materials often consists of plate-like particles with irregular outlines. The most different point between talc and fluorine micas is the shape of the outline of particles. These results indicate that the outer parts of fluorine micas may be formed by the crystallization with solid state reactions.



(A) TP–1 (B) TP–2

(C) TP–3 (D) SAD of TP–3

FIG. 4. Electron micrographs of synthetic fluorine micas