

## Supplementary file

Fig. S-1

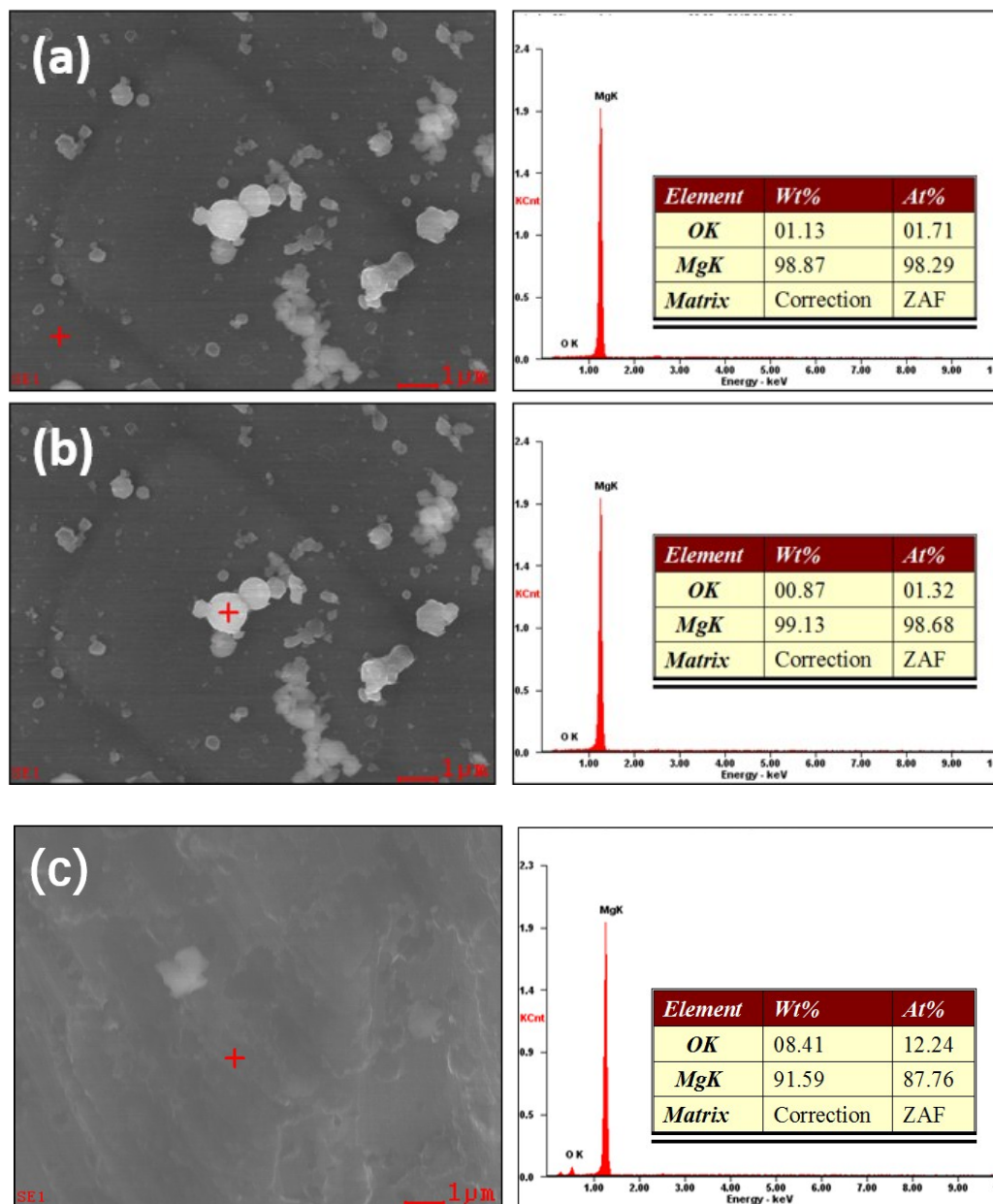


Fig. S-1. The scanning electron micrographs (SEM) and energy dispersive spectrum analysis (EDS) images of (a)(b) the spherical Mg powder in different position, and (c) the plat-like Mg powder.

Fig. S-2

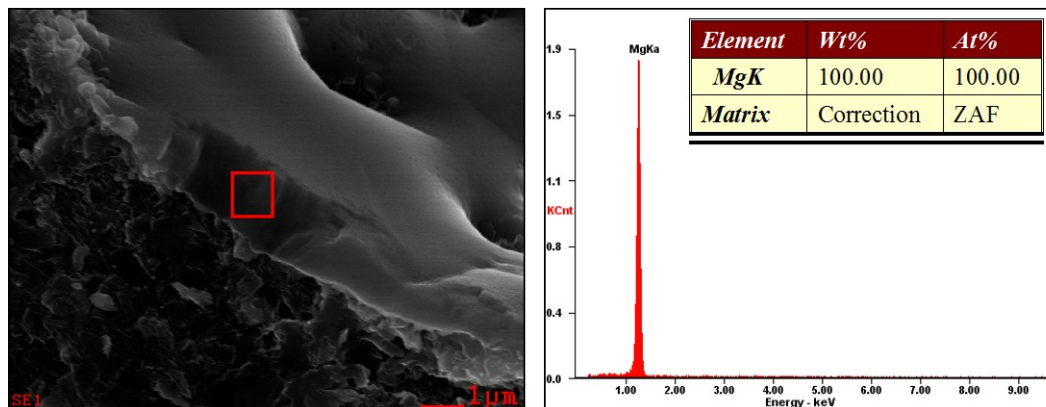


Fig. S-2. The EDS of  $Mg^{11}B_2$  samples using spherical Mg powder sintered at 750°C.