1. Introduction Since the discovery of graphene, free standing nanosheets have been intensively investigated, and semiconductor two-dimensional nanosheets have been synthesized as a new class of nanoscale materials. The formation of Si nanosheets by Ca extraction from CaSi₂ by electrochemical methods in solutions, and their structural modification were reported [1,2]. On the other hand, the formation of silicides and silicon nanostructures and their structural modification using metal chlorides have been intensively investigated, and it is expected to fabricate Si-based nanostructures using metal chlorides. In this paper, formation of Si-based nanosheets by extraction of Ca from CaSi₂ layers on Si substrates using CrCl₂ is reported.

2. Experimental procedure Nanosheets were synthesized by exposure of CaSi₂/Si substrates to CrCl₂ vapor evaporated at 872 ºC at the substrate temperature of 650 ºC for 10 min. The structural properties of the nanosheets were characterized by SEM and TEM with EDS.

3. Results and discussion Figure 1 shows SEM images of the substrate surface (a) before and (b) after the CrCl₂ treatment. Figure 2 shows TEM images of the Si-based nanosheet in the flake-like structure. It is found that the flake-like structure consists of nanosheets, and the nanosheet has a stepped structure. It would be possible that Ca atoms are preferentially removed from the substrate to form Si-based nanostructures. It is found that metal chlorides are preferable to extract Ca atoms from CaSi₂ to form Si-based nanosheets. Further characterizations of the nanosheets will be expected.