Osumilite-group mineral (i.e. Mg-Fe hexagonal silicates) is found in various chemical groups and petrologic types of chondrites. The osumilite-group mineral consists of six end-members; that is Mg-K, Na, Ca and Fe-K, Na, Ca (Miúra and Shibuya, 1985; Miúra, 1985, 1986). The present EPMA data of 46 chondritic meteorites from E to LL groups and from 3 to 6 types show that the Mg-Na phase is the most abundant (i.e. 70, 67, 64, 71% in E, H, L, LL groups, respectively), and that 61 percent of osumilite compositions in chondrites are found in type 3 as Mg-Na phase. On the other hand, the osumilite composition in the type 6 chondrite has only the Fe-K phase (Fig. 1).

Although each osumilite end-member abundance in the terrestrial and extraterrestrial osumilite-group minerals depends upon the chemical environments, almost all osumilite composition in the type 3 is Mg-rich phases, whereas that in the type 6 is relatively Fe- and K-rich phases. Therefore, the osumilite phase composition is considered to be a sensitive indicator of formation in the chondritic meteorites.

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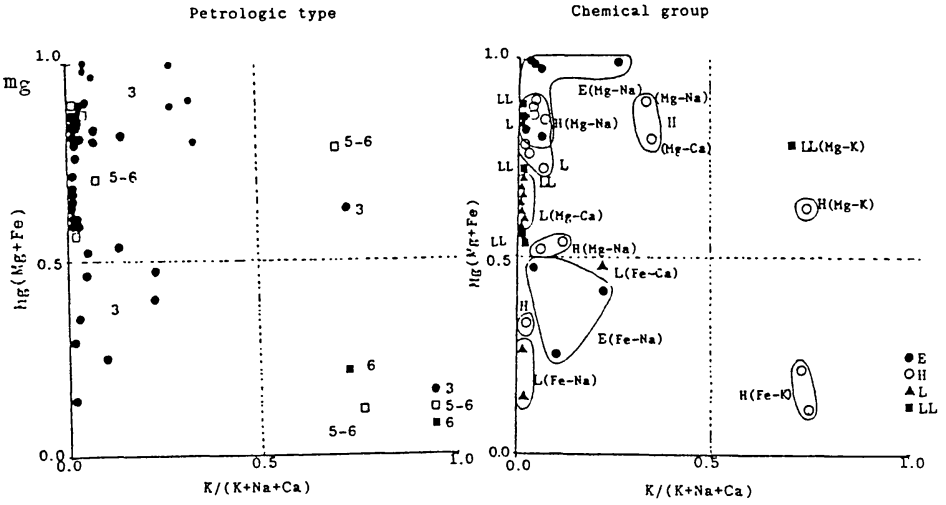

Fig. 1 Relation between mg (= Mg/(Mg + Fe)) and K/(K + Na + Ca) in various chemical groups and petrologic types.

CATHODOLUMINESCENCE OF THE CO CHONDRITES

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Mineralogical and petrological data are consistent with the CO chondrites constituting a metamorphic sequence (McSween, 1977). In many respects the properties displayed are similar to those of type 3 ordinary chondrites which show a 1000 fold increase in TL sensitivity with increasing metamorphism experienced (Sears *et al.*, 1980). The TL data for CO chondrites differ from those of the type 3 ordinary chondrites and have been interpreted in terms of the TL phosphor being feldspar of two types; a metamorphism-pro-