AN EXPERIMENTAL STUDY ON THE FORMATION OF CORDIERITE+MELT IN THE AL-SI RICH PORTION OF K2O-MGO-AL2O3-SIO2-H2O SYSTEM

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The reactions 2Phl + 6Sil+9Qtz = 3Crd +2 Kfs +V (a) and =3Crd + Melt (b) were studied under hydrothermal conditions in Al-Si rich portion of KMASH system, in a P-T range of 3-9 kbar and 650-900 C respectively. The reaction (a) intersects the Crd+Kfs+Qtz+H2O=L curve of Seifert (1974) at 720C/5.2 kbar and lies below the curves of Schreyer & Seifert (1969) and Aranovich (1987) by 0.5 and 1.0 kbar respectively. The curve (b) is in good agreement with the theoretical curve of Carrington and Harley (1995) but with K-feldspar component in the melt. These reactions are compared with mineral reactions studied in granulite rocks of Sonapahar, India. The P-T estimated by Lal et al., (1987) through the reaction Bio + Sil+Qtz=Crd+Melt in a cordierite gneiss was 750 C/5 kbar and is consistent with the experimental results. The estimated restites (15-25%) and granitic melts (75-85%) by them based on modal analysis are also in good agreement with the percentage of melt and mineral phases observed in the experimental study.