



When kyanite decomposed, the first evidence usually was the formation of glass and small crystals of Al_2O_3 from the fine-grained material at the grain boundaries [Fig. 5(a)]. The larger crystals of kyanite break down to form mullite* and glass [Figs. 5(a), (b)] and then at longer times or at higher temperatures the increased formation of Al_2O_3 is seen [Fig. 5(c)]. Although more data are needed for a firm conclusion, the tentative interpretation is that the final products from the decomposition of kyanite at high temperatures and pressures (above about 20,000 atm) are Al_2O_3 (corundum) and SiO_2 -rich glass, but the reaction path may involve the formation of mullite before the final stage is reached.



- Fig. 5 Polished and etched sections as seen in reflected light, bright field. HF etchants: C = corundum; Gl = glass; M = mullite; K = kyanite.
 - HF etchants; C = corundum; Gl = glass; M = mullite; K = kyanite.
 (a) Run No. 1648. Corundum and glass at original kyanite grain boundaries; mullite and glass within original kyanite grains.
 - (b) Run No. 1649. Remnants of kyanite surrounded by mullite plus glass.
 - (c) Run No. 1624. Large mullite crystals (light grey) in glass (darker grey). Corundum crystals (white) in mullite.
 - (d) Run No. 1630. Corundum and glass formed from sillimanite.

*Below about 25,000 atm both indices of refraction and the x-ray patterns are consistent with those reported for mullite. There may be some increase in refractive indices at higher pressures.