It has generally been held that a single $\beta$-phase with relatively high stacking-fault energy exists for GaS, in contrast to the polytypism of GaSe which arises from alternative stacking sequencing (Basinsky, J.J.; Meinert, A.E. and Kasper, H.M., 1973, Sol. State Comm., 14, 1133). Microcrystals of GaS prepared without high-temperature annealing were studied by a combination of CBED and HREM.

As a result a polytype, previously described as a high pressure form (D'Armour, H.;Holzapfel, W.B.; Polian, A. and Cheyv, A., 1982, Sol. State Comm., 44, 853) was identified as a major constituent. This phase, unlike the $\beta$-phase, appears to have a relatively low stacking-fault energy. The common Burgers's vector was identified by CBED analysis, while the stacking sequence of the majority component was determined from HREM images. It was concluded that GaS has (at least) two stable polytypes, which differ from those of GaSe in incorporating relative rotations between the structural layers.