The Z and A of the element 105 nuclide were unambiguously identified in a manner similar to that used in the discovery of rutherfordium by observing the time correlation between α-particles emitted by the parent (element 105) and those of the known daughter (^{256}Lr). The Berkeley group's data combined more than ten times more events than were reported by Flerov et al. Their α-particle energies are in agreement with what is currently known about $^{260}_{105}$Ha. In honor of the German radiochemist Otto Hahn who discovered fission and developed many experimental techniques, the Berkeley group suggested the name of hafnium (symbol Ha) for this element. This work was subsequently confirmed by Bemis et al. (35).

At about the same time as the Berkeley work, Flerov, Y. T. Oganessian, Y. V. Lobanov, Y. A. Lasarev, S. P. Tretyakova, I. V. Kolesov, and V. M. Plotko (36) reported the observation of a nuclide with a half-life of 1.8 ± 0.6 sec. (which decayed by spontaneous fission) produced in the reaction $^{243}_{95}$Am with $^{22}_{10}$Ne. On the basis of nuclear reaction systematics and the angular distribution of the observed reaction products, those workers assigned this nuclide to ^{261}105. This spontaneous fission activity was reported (37) to behave as if it were due to a group V element in a thermochromatography experiment although this conclusion has been criticized (29). The Soviet group has suggested the name of nielsbohrium (symbol Ns) for element 105 in honor of the Danish physicist Niels Bohr.

K. E. Gregorich, R. A. Henderson, D. M. Lee, M. J. Nurmia, R. M. Chasteler, H. L. Hall, D. A. Bennett, C. M. Gannett, R. B. Chadwick, J. D. Leyba, D. C. Hoffman and G. Herrmann (38) have shown that hahnium behaves chemically much like tantalum and niobium, in agreement with the actinide concept. J. V. Kratz, H. P. Zimmerman, U. W. Scherer, M. Schädel, W. Brüchle, K. E. Gregorich, C. M. Gannett, H. L. Hall, R. A. Henderson, D. M. Lee, J. D. Leyba, M. J. Nurmia, H. Gäggeler, D. Jost, U. Baltensperger, Ya Nai-Qi, A. Türler, and Ch. Lienert (39) later showed, in anion exchange experiments, that anionic halide complexes of hahnium are different from those of tantalum and are more like those of niobium and protactinium.

Element 106

Experiments leading to competing claims for the discovery of element 106 were performed essentially simultaneously at Berkeley and Dubna in 1974. Ghiorso, J. M. Nitschke, J. R. Alonso, C. T. Alonso, M. Nurmia, E. K. Hulet, R. W. Lougheed and I (40) (Figure 19) reported the observation of ^{263}106 by the reaction

$$^{249}_{98}\text{Cf} + ^{18}_{8}\text{O} \rightarrow ^{263}106 + 4^{1}_{0}\text{n}$$

The new nuclide was shown to decay by α-emission with a half-life of 0.9 ± 0.2 sec. and a principal α-energy of 9.06 ± 0.04 MeV to previously known $^{259}_{104}$Rf which in turn was