

must be built and means of coping with their beams at the target must be developed in order to overcome limitations due to small nuclear reaction cross sections. Increase in orders of magnitude in heavy ion intensity should make possible nuclear synthesis reactions with secondary (radioactive) beams of neutron-excessive projectiles, which might greatly increase the yields of sought-after new nuclides. Improved methods for handling safely and efficiently and making chemical measurements on increasing quantities of the highly radioactive transcurium nuclides must be developed.

Improved apparatus of all kinds for the determination of the chemical structure, energy levels and their electronic structure, thermodynamic data, etc., improved laser beams, and the use of new apparatus, such as the Advanced Light Source (ALS) being built at the Lawrence Berkeley Laboratory, will place new power in the hands of the chemist. The ultimate achievement will be the perfection of means of performing single atom chemistry.