The elemental analysis of Pt-Re/alumina catalysts was carried out by nondestructive and bulk neutron activation analysis. Samples were irradiated with a Am-241-Be source-based as well as accelerator-based thermal neutrons and induced activities were measured by a HPGe detector with a PC-based data acquisition and analysis system. An appropriate calibration technique was established for the determination of the respective ratios of each element present in the catalysts. The technique proved to be useful for the determination of low concentrations of Pt and Re in the catalyst samples.