New radioactive isotopes for nuclear medicine can be produced using particle accelerators. This is one goal of ARRONAX, a high energy – 70MeV – high intensity – 2 x 350μA – cyclotron set up in Nantes.

A priority list was established containing β^- – 47Sc, 67Cu – β^+ – 44Sc, 64Cu, 68Ge/68Ga, 82Sr/82Rb – and α emitters – 211At. Among these radioisotopes, the Scandium 47 and the Copper 67 have a strong interest in targeted therapy.

The optimization of their productions required a good knowledge of their cross-sections but also of all the contaminants created during irradiation. We launched on ARRONAX a program to measure these production cross-sections using the Stacked-foils' technique. It consists in irradiating several groups of foils – target, monitor and degrader foils – and in measuring the produced isotopes by γ-spectrometry. The monitor – natCu or natNi – is used to correct beam loss whereas degrader foils are used to lower beam energy. We chose to study the natTi (p,X) 47Sc and 68Zn (p,2p) 67Cu reactions. Targets are respectively natural Titanium foil – bought from Goodfellow – and enriched Zinc 68 deposited on Silver. In the latter case, Zinc targets were prepared in-house – electroplating of 68Zn – and a chemical separation between Copper and Gallium isotopes has to be made before *g* counting.

Cross-section values for more than 40 different reactions cross-sections have been obtained from 18MeV to 70MeV. A comparison with the TALYS code is systematically done. Several parameters of theoretical models have been studied and we found that is not possible to reproduce faithfully all the cross-sections with a given set of parameters.

Keywords: cross-section — nuclear medicine — stacked-foils — ARRONAX — scandium 47 — copper 67— TALYS