Angular Distributions of the Alpha Particles from the (p, α) Reactions on Na^{23} and K^{39} at 6.9~7.3 MeV

Teruo NAKAMURA, Kunio TAKAMATSU, Akira MASAIKE,
Sigeru KAKIGI, Dai Ca NGUYEN, Sukeaki YAMASHITA
and Takuji YANABU

Journal of the Physical Society of Japan, **17**, 19 (1962)

The angular distributions of the reactions Na^{23}(p, α)Ne^{20} and K^{39}(p, α)A^{36} leading to the ground and first excited states of the residual nuclei have been measured at 6.9, 7.1 and 7.3 MeV of the incident proton energy, respectively, by the use of a semiconductor detector.

For the reaction Na^{23}(p, α)Ne^{20} the angular distributions of these alpha particles are almost 90° symmetrical at 7.1 MeV of the incident proton energy, and they are slightly unsymmetrical about 90° at 7.3 and 6.9 MeV. For the reaction K^{39}(p, α)A^{36}, the angular distributions are almost 90° symmetrical at all energies of the incident protons.

It is considered that the reactions Na^{23}(p, α)Ne^{20} and K^{39}(p, α)A^{36} leading to the ground and first excited states of the residual nuclei, at around 7 MeV of incident proton energy, occur through a compound nucleus process and in the former reaction the number of the compound states excited by the about 7 MeV protons are probably not so many as to justify the statistical assumption.

O^{16} (d, α)N^{14} Reaction with Deuterons near 15 MeV

Takuji YANABU, Sukeaki YAMASHITA, Teruo NAKAMURA,
Kunio TAKAMATSU, Akira MASAIKE, Shigeru KAKIGI,
Dai Ca NGUYEN and Kiyohiko TAKIMOTO

Journal of Physical Society of Japan, **16**, 2594 (1961)

O^{16}(d, α)N^{14} reaction was investigated at deuteron energy 14.5 MeV and compared with the resuls at 14.7 MeV and 15 MeV. Angular distributions were obtained for alpha-particle groups leading to the ground and second excited states of N^{14}. Integrated cross sections for α_1 and α_2 were 8mb and 13mb respectively. Alpha partiles leading to the first T=1 state of N^{14} were also observed but scarce.

Al^{27}(d, α)Mg^{25} Reaction at 14.7 MeV

Takuji YANABU, Sukeaki YAMASHITA, Teruo NAKAMURA,
Kunio TAKAMATSU, Akira MASAIKE, Shigeru KAKIGI,
Dai Ca NGUYEN and Kiyohiko TAKIMOTO

Journal of the Physical Society of Japan, **17**, 914 (1962)

The angular distributions have been measured for the eight groups of alpha