

ENERGY DEPENDENCE OF THE $^{13}\text{C} + ^{16}\text{O}$ SCATTERING AND QUASI-MOLECULAR ABSORPTION POTENTIAL

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Experimental data of the $^{13}\text{C} + ^{16}\text{O}$ elastic scattering at the energies $E_{\text{c.m.}} = 6.28 - 59.17$ MeV were analyzed within the optical model and coupled-reaction-channels method. The energy dependence for the $^{13}\text{C} + ^{16}\text{O}$ potential of the Woods - Saxon type with volume and the surface absorption was studied. It was found that the absorption potential has quasi-molecular form with narrow maximum in the surface region, which can be caused by a resonance of the $^{29}\text{Si} = ^{13}\text{C} + ^{16}\text{O}$ two-nuclear system. The contributions of simple transfers in the $^{13}\text{C} + ^{16}\text{O}$ elastic scattering were obtained.

Keywords: elastic heavy-ion scattering, transfer reactions, optical model, coupled-reaction-channels method, optical potentials, spectroscopic amplitudes of nucleons and clusters.