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P94 - Precision differential cross sections of the 12C(p,p)12C elastic scattering in the vicinity of the resonance at 1.726 MeV

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More precise and based on the previously published data, differential cross sections of the 12^C(p,p)12^C elastic scattering in the vicinity of the resonance at 1.726 MeV for the 170° scattering angle were obtained in present work. New data were compared with the similar literary cross section values as well as theoretical excitation function estimations. A shape of our excitation function fits very good experimental data from [R.Amirikas, D.N.Jamieson, S.P.Dooley. NIMB77 (1993) 110-116] and has some shift in energy with respect to our data. As an example of the cross section application, a result of the analysis of thin film structure with multiple element composition (H, C, N, O, Ti, Cu, soda lime glass substrate (SLG)) is shown. The sample is a thin film TiO based coating on the SLG matrix obtained using Ion Beam Assisted Deposition (IBAD) of Ti^n+ (n=1; 2; 3) ions, namely, simultaneous Ion Deposition and MEVVA Ti Ion Implantation. Total IBA analysis of thin film structure was performed using three complimentary ion beam techniques such as RBS, Resonant Elastic Back Scattering of 1^H^+ and 4^He^+ ions, and ERDA. A buried C_3N_4 stoichiometric sub-layer in the TiO coating and gaussian like H depth profile in coating-matrix interface were observed. Additionally, scratch test reveals an increase in the micro hardening of the coating with respect to the original SLG matrix. Most probably, TiO and trace CuO composite based hydrogen diffusion barrier on SLG substrate was formed after IBAD treatment.

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