

§20. Total Electron Scattering Cross Section of CO₂

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Carbon dioxide is one of the major residual molecules in the vacuum vessel. In the high temperature plasma apparatus, this molecules easily dissociate into more simple molecules and their constituent atoms and various types of ions. For understanding the behavior of CO₂ in the fusion apparatus, various electron scattering cross sections of CO₂ are needed. Almost all of the experimental data reported for electron scattering cross section were measured at room temperature. Electron scattering cross sections for high temperature target are necessary for investigation of the real situation in the high temperature plasma. In the data of electron scattering, the total cross section has an importance as a standard value for the summation of various process. We have been planed to measure the total cross sections at high temperature target conditions (473 K max.). As a first step of this study, the cross sections have been measured at room temperature in the energy range from 4 eV to 1 keV. The purpose of this measurements is to confirm reliability in our measuring system, and to decide standard data for room temperature. The experimental method and the apparatus used in this study are the same as reported elsewhere ¹⁾. In fig.1, our preliminary results are compared with those of

Szmytkowski et al. ²⁾. Agreement between two results is good in the energy range compared.

References

- 1) Nishimura, H. and Sakae, T. Jpn. J. Appl. Phys. 29(1990)1372.
- 2) Szmytkowski, Cz. et al., J. Phys. B, 20(1987)5817.

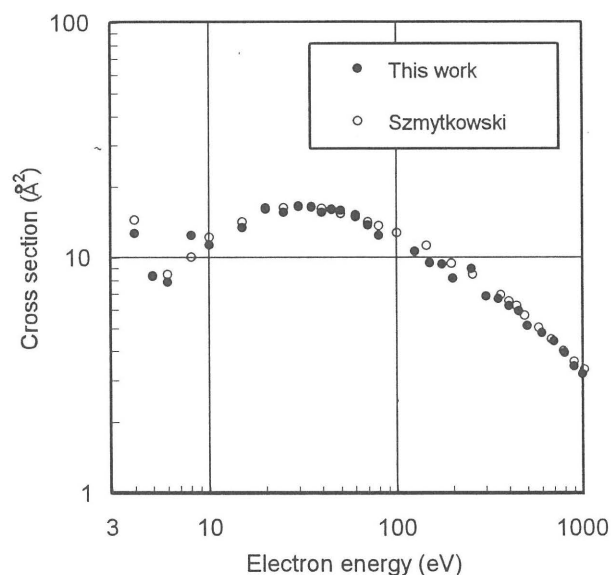


Fig.1 Total electron scattering cross section of CO₂.