ABSOLUTE CROSS SECTIONS FOR NEAR-THRESHOLD ELECTRON-IMPACT EXCITATION OF THE $3s^2\ {}^1S \rightarrow 3s3p\ {}^1P$ AND $3s^2\ {}^1S \rightarrow 3s3p\ {}^3P$ TRANSITIONS IN Si^{2+} (Ref. 1)

B. Wallbank,[2] N. Djurić,[3] O. Woitke,[3] S. Zhou,[3] G. H. Dunn,[3] A.C.H. Smith,[4] and M. E. Bannister

Absolute total cross sections for electron-impact excitation of the $3s^2\ {}^1S \rightarrow 3s3p\ {}^3P$ and $3s^2\ {}^1S \rightarrow 3s3p\ {}^1P$ transitions in Si^{2+} were measured using the merged electron-ion beams energy-loss technique. The results are compared to R-matrix close-coupling theory, which predicts a strong resonance enhancement of the cross section near the threshold for excitation of the ^3P state and this is confirmed by the experiments. The observed disagreement between theory and experiment for the dipole excitation is suggested to be due to resonance interference.

---

1. Abstract of published paper: *Phys. Rev. A* **56**, 3714 (1997).

2. St. Francis Xavier University, Antigonish, Nova Scotia, Canada.

3. JILA, University of Colorado and National Institute of Standards and Technology, Boulder, CO.

4. University College London, London, UK.