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Stokes Parameter Measurements of Fluorescence from N_2, N_2^+, and NI Resulting from Polarized-Electron Impact on N_2[1] T.J. GAY, J.W. MASEBERG, University of Nebraska — We have measured the Stokes parameters of the N_2^+ B $^2\Sigma_u^+ \rightarrow$ X $^2\Sigma_g^+$ 391.4 nm transition, the N_2 C $^3\Pi_u \rightarrow$ B $^3\Pi_g$ 380.5 nm transition, and the NI (^{3}P)3p $\rightarrow$ (^{3}P)3s 824.2 nm transition, all resulting from spin-polarized electron impact on N_2 gas. Incident electron energies ranged from threshold to 100 eV; the scattered electrons were not detected. We find the circular polarization fraction P_3 for light emitted in the direction of the incident electron spin polarization is consistent with zero in the region within 10 eV above threshold for these transitions. This stands in contrast to the linear polarization fraction P_1, which is $\sim$0.05 or greater over a broad range of energies in all three cases. These results are considered in light of the fact that H_2 molecular triplet transitions [1] exhibit large values of P_3 as do the excited atomic fragments resulting from electron-impact induced dissociation [1,2]. [1] A.S. Green, G.A. Gallup, M.A. Rosenberry, and T.J. Gay, Phys. Rev. Lett. **92**, 093201 (2004). [2] J.F. Williams and D.H. Yu, Phys. Rev. Lett. **93**, 073201 (2004).

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