Figure 4-1
Energy level diagram for a helium-neon laser, a four-level laser system. Ground-state helium atoms are promoted to singlet and triplet excited states via electrical discharge. Collisional energy transfer of the excited-state He atoms to ground-state neon atoms populates excited states above the lowest excited state for neon, generating a population inversion. Lasing emission occurs at three wavelengths: 632.8 nm, 1.152 µm, and 3.391 µm. Two radiationless decay steps, the latter via collisional deactivation with the walls of the discharge tube, return neon to the ground state.