Pfost, Vardeny, and Tauc Respond: We agree with the conclusion of Merk, Dunstan, and Czaja[1] that the distant-pair model, although in agreement with data on photoluminescence (PL) decays under bias illumination, does not seem to be applicable to biased photo-induced-absorption (PA) decays. Because of the current incomplete understanding of the time-dependent electronic effects in *a*-Si:H it is unfortunately often true, as is the case here, that a particular model will work nicely for one effect but not for others.

Merk, Dunstan, and Czaja interpret the deviation from the power law in the biased PL decay occurring at long times as evidence for the onset of an exponential decay predicted by their model. Stoddart and Tauc have recently extended the time range of the measurements of PL decays and found[2] that at long times the PL signal decays below the base line produced by biasing (Fig. 1). They proposed that the effect is the quenching of the base-line PL by the pulse-generated carriers. In fact, Stoddart and Tauc's experimental data show that the deviation from the power law observed in PL at long times is proportional to the density of excess carriers as measured by the PA decay. This observation casts doubts on the validity of the assumption that the deviation from the power law is due to the onset of an exponential recombination process.

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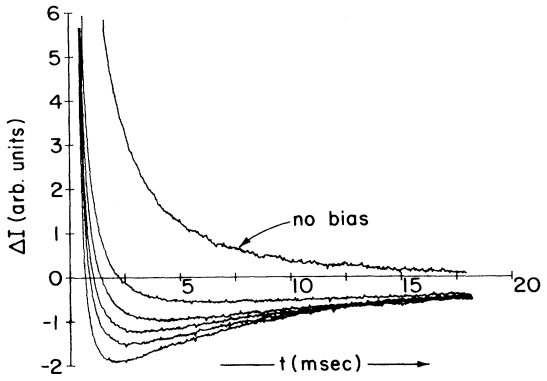

FIG. 1. Photoluminescence decay in *a*-Si:H at 20 K following an excitation pulse (photon energy 2.1 eV, pulse energy 50 μJ, pulse duration 8 nsec, repetition rate 10 Hz) in the dark and with an illumination bias (photon energy 2.6 eV). The bias intensities were 64 (highest curve), 127, 691, 254, and 382 mW/cm^2 (lowest curve). The PL intensity ΔI was measured relative to the steady-state PL intensity.

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[1]E. Merk, D. J. Dunstan, and W. Czaja, preceding Comment [Phys. Rev. Lett. **54**, 250 (1985)].

[2]H. A. Stoddart and J. Tauc, to be published.