Chen *et al.* Reply: In their Comment [1] on our recent Letter [2], Thewalt and Karasyuk (TK) present new experimental results on the photoinduced configurational change of the S-Cu defect in Si, where they find no evidence for the threshold kinetic energy $E_a = 5$ meV of the free exciton (FE). We have shown that the S-Cu defect has two defect levels, i.e., $(0/+)$ and $(-/0)$, in the band gap [3]. In principle both electron-electron-hole (eeh) and electron-hole-hole (ehh) Auger processes may occur, which can induce the configurational change. The relative importance between these two Auger processes critically depends on the charge states of the defects. The eeh process will dominate when the defects are negatively charged, whereas the ehh process will be important if the defects are positive. For neutral defects both processes may contribute. The distribution of the defects among various charge states is determined by the Fermi level position E_F in the sample, which depends on doping of the starting materials and the amount of the S and contaminants (e.g., Cu) incorporated during the sample preparation.

The samples studied in our recent Letter [2] are n type, with E_F close to E_c. The S-Cu defect is in its negative charge state of the stable configuration at $\sim$4 K [3]. Under illumination during the photoconversion experiments the defect can be present in all three charge states. Most defects are negative, which accounts for the dominance of the eeh process. Nevertheless, the presence of the positive and neutral charge states permits other Auger processes to occur simultaneously. This we observed on a longer time scale (see Fig. 1), where the photoconversion shows two exponential decays. The faster component is due to the eeh process via the negative defects [2], revealing the finite E_a (5 meV). The slower component is believed to be dominated by the ehh process. The situation could be very different, e.g., when E_F is lower. Then the ehh process can dominate and no threshold energy is expected because the bound hole at the S-Cu defect has been shown to be highly localized in real space, relaxing the momentum conservation. Further, the ehh process is known to be phonon assisted [4]. No threshold energy is expected for the eeh and ehh processes involving the neutrally charged defects since the participating bound particle is tightly bound. The data which TK present in their Comment may fall into this category.

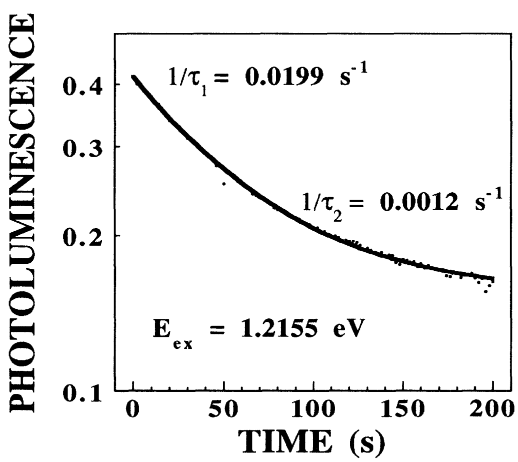

FIG. 1. Experimental data for the decay of the S_A photoluminescence intensity under illumination of 1.2155 eV light. The solid line is obtained from a biexponential curve fitting, where the faster component is due to the eeh Auger process and the slower component to the ehh Auger process.

TK give two arguments for the lack of E_a for the eeh process, i.e., the deep-level nature of the bound electron and a fast FE thermalization time [1]. The first argument is true for the eeh process involving the neutral defects. It lacks experimental support for the negative defects, however, since the nature of the bound electron in that case is still unknown. The second argument does not prevent the observation of E_a when the eeh Auger process is *selectively* monitored as in our case (see, e.g., Ref. [5]).

It should also be pointed out that the 5-meV E_a was already present, although not discussed, in Fig. 3 of our previous Letter [3].

In summary, the conclusions drawn in our Letter [2] are relevant. The data which TK present in their Comment are believed to represent a different case when other Auger processes (e.g., the ehh process) dominate.

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