Excited-state relaxation in PbSe quantum dots

Joonhee M. An, Marco Califano, Alberto Franceschetti, and Alex Zunger

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Joonhee M. An,[1] Marco Califano,[2] Alberto Franceschetti,[1,a)] and Alex Zunger[1,b)]
[1] *National Renewable Energy Laboratory, Golden, Colorado 80401, USA*
[2] *Institute of Microwaves and Photonics, School of Electronic and Electrical Engineering, University of Leeds, Leeds LS2 9JT, United Kingdom*

(2 200 2 200 2 200)

( ). (≤1) 1 2046 211 260 24 $P \rightarrow S$ $P \rightarrow S$. © 2008 *American Institute of Physics*. [10.1063/1.2 01022]

INTRODUCTION

[1] [2] Δ Δ [. 1( )]. [. 1( )], Δ *radiative* [3] Δ [4] [5,6]

( ) (10) [S P . 1( )] 200 400 100 300 ~30 (11) 1 [3,11,12] (~50) (~30).[13–16] [5,6] [1] [4,5] [. 1( )].

(L,

$\mathbf{R}$,

$$V(\mathbf{r}) \quad \sum_{\alpha} \sum_{\mathbf{R}} v_{\alpha}(|\mathbf{r} \quad \mathbf{R} \quad \mathbf{d}_{\alpha}|). \tag{4}$$

[illegible] (i) [illegible] *bulk* [illegible] (. 36) [illegible] ~ 0.5 [illegible]

[illegible] (ii) [illegible] L- [illegible] ([illegible]) [illegible] [40] [illegible] 40 [illegible]

[illegible] L [illegible] 260 24 $(R \quad 15.3 \quad)$ [illegible] 2046 211 $(R \quad 30.6 \quad)$. [illegible] [,10] [illegible] 10 [illegible] (2), [illegible]

$$\epsilon^{\;1}(\mathbf{r}_1,\mathbf{r}_2) \quad \epsilon^{\;1}(\mathbf{r}_1,\mathbf{r}_2)+[\epsilon^{\;1}(\mathbf{r}_1,\mathbf{r}_2) \quad \epsilon^{\;1}(\mathbf{r}_1,\mathbf{r}_2)]m(\mathbf{r}_1)m(\mathbf{r}_2), \tag{5}$$

[illegible] $m(\mathbf{r})$ [illegible] 1 [illegible] $|\mathbf{r}| \leqslant R \quad d$ ([illegible] , $d \quad 1$), [illegible] $\sqrt{[\;(\pi(R \quad |\mathbf{r}|)/2d)+1]/2}$ [illegible] $R \quad d$ [illegible] $R+d$, [illegible]

e_p e_s

(⩾130 [illegible], [illegible] $\sim \hbar\omega$)

[illegible] E [illegible] τ_A [illegible]

SUMMARY

[illegible] $P \rightarrow S$ [illegible] [3,12,2] [illegible] 1 [illegible] 20 [illegible] 35 [illegible] [10] [illegible] $P \rightarrow S$ [illegible] $P \rightarrow S$ [illegible]

[illegible] τ_A [illegible] ([illegible] [2] [illegible] [30]([illegible]