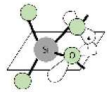
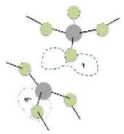
Name	Structure	Param	OA peak eV (FWHM eV)	Oscillator strength	Note	PL peak eV (FWHM eV, lifetime RT)	Refs
Oxygen deficient center	>Si:	No	5.05 (0.32)	0.15	S_0-S_1 transition ISC assisted (T_1-S_0 transition)	4.4 (0.4 eV; 4.0 ns) 2.75 (0.34; 10 ms)	[16,29,156–159]
			3.15 (0.30)[①]	$1.60\ 10^{-7}$	S_0-T_1 transition	2.75(0.34; 10 ms)	
ODC(II)			6.9 (0.4)	0.1–0.2	PL features similar bands	4.4 and 2.7	
ODC(I)	≡Si-Si≡	No	7.6 (0.5–06)	0.1–0.2		4.4 (0.4 eV, 1.4 ns)	[16,139,157,159–162]
Non-Bridging Oxygen Hole Centers	≡Si-O•	Yes	1.97 (0.17)	$1.90\ 10^{-4}$	Asymmetric Pekarian-shaped	1.91 (0.17, 10–20 μs)	[16,121,163–169]
			4,8 (1.0)	0.05	5 Gaussian are needed to describe		
			6.4 (1.7)[①]	0.05	the absorption in UV VUV		
NBOHC					see ref [167] for the relative intensity		
E'	≡Si•	Yes	5.8 (0.7)	0.1–0.2		Not observed	[16,156,170–172]
Self-trapped hole		Yes	2.61 (1.2)	0.283[②]	Inherent	None reported	[173–180]
STH_1			1,88 (0.2–0.5)		Strain-assisted (observed in OF)	None reported	[173,177,178]
STH_2		Yes	2.16 (0.3–0.6)	0.283[②]	Inherent	None reported	[173–180]
			1.63 (0.3–0.7)		Strain-assisted (observed in OF)	None reported	[173,177,178]
Peroxy Linkage **POL**	Si-O-O-Si	No	3.8(0.2), 4.2(0.6, 7.3(0.2), 7.5(0.1)	~0.0005–0.003	Computational	None reported	[30]
Peroxy Radical **POR**	Si-O-O•	Yes	2.02, 4.08, 5.02	0.00056, 0.052,0.035	Computational (one SiO_4 H-passivated tetrahedron cluster)	–	[126,132,181]
			2.0, 4.8	0.0004, 0.2	experiment		
Self-trapped Electron			3.7	–	Computational	–	[173,182]
STE			4.6	–	Computational	–	[173,182]
			6.4	–	Computational	–	[173,182]
Self-trapped Exciton		No	4.2 (1.16)	–	Computational	2.85 eV (theory)	Theory [183]
STEX			5.3 (0.78)		Experimental	2.6 −2.8 eV (exp)	Exp [184–189]
Ozone	O_3		4.8 (0.8–0.86)	Cross section $1.2\ 10^{-17}$ cm^2	VUV UV bleaching can induce the O_2 emission [21]		[190,191]
O2	molecular oxygen	Yes	0.97 (0.013)	1.1 10−8	T1-S0 transition	0.97 (0.01 eV, 0.4–0.8 s)[③]	[192–198]
			1.62 (0.013)	4.2 10−9	T1-S1 transition		
Cl0	Cl0	Yes	3.26	–	–	–	
			3.65	–	–	–	[88,177,199,200]
Cl^2	Cl^2	No	3.78 (0.6)	3.8 cross section $2.58\ 10^{-19}$ cm^2	Vibronic progression T < 110 K	1.2 (0.42, 5 ms at 13 K)	[122]
			2.3				
H(I)	>Si•-H	Yes	Not observed	–	–	Not observed	[14,17,23]
LTRIA	STH	Yes	0.6 – 0.7 eV (non-Gaussian)	–	LTRIA is attributed to inherent STHs	Not observed	[153]

① Peak and FWHM derived from PLE spectra.
② Linear combination Gaussian bands peaking at 2.16 and 2.60 eV.
③ Strong radioluminescence signal under X-rays [103].