Electronic Supplementary Material (ESI) for Physical Chemistry Chemical Physics.

Supporting Information

Origin of luminescence from Di[4-(4-diphenylaminophenyl) phenyl] sulfone (DAPSF), a blue light emitter - an X-ray Excited Optical Luminescence (XEOL) and X-ray Absorption Near Edge Structure (XANES) study

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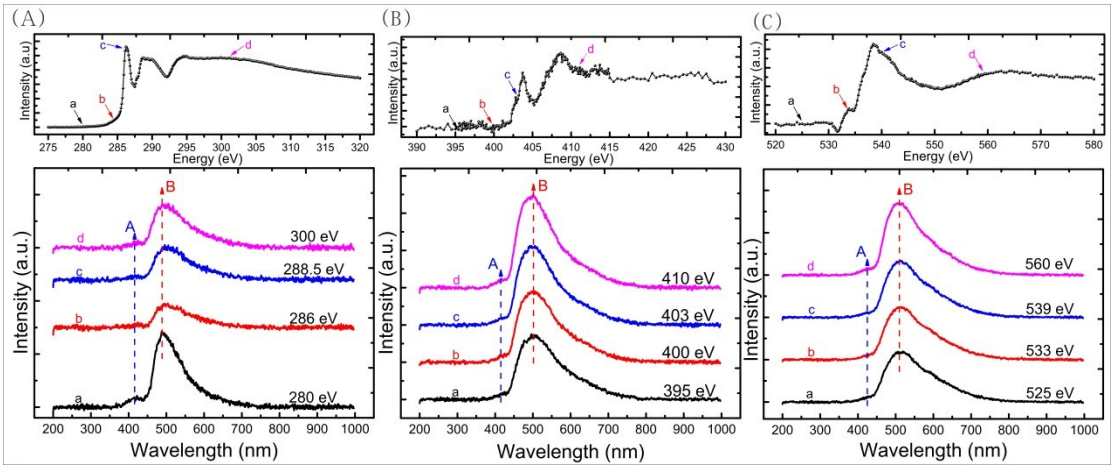

FIG. S1 XEOL spectra of DAPSF excited with photon energy across (A) C K –edge ; (B) N K-edge ; (C) O K-edge. The top graphs show the corresponding XANES and the arrows indicate the excitation energy across the edge of interest.

All XEOL spectra in Fig. S1 exhibit two interesting features. The peaks center at 500 nm ranging from 480-515 nm of XEOL are essentially originated from the C K-edge, N K-edge and O K-edge. However, an interesting small blue peak at A is also observed. It is possibly stemmed from ineffective energy transfer to the blue channel. The intensity of XEOL excited at energy before C K-edge shows a little higher intensity than those excited across and above C K-edge, it is implied that the blue luminescence is hampered by C absorption.

Table S1. Photoabsorption cross section for all element of DAPSF: C, N, O and S.

Excitation Energy: eV; Photoabsorption cross section: cm^2/g

Elements / Excitaion Energy	C (Carbon)	N (Nitrogen)	O (Oxygen)	S (Sulfur)
Amount Percentage (%)	86.2 %	4.2 %	4.8 %	4.8 %
290 eV	4.9392E+04	3343	5387	4.3973E+04
400 eV	2.3841E+04	1243	2403	2.3911E+04
535 eV	1.1819E+04	1.6951E+04	1170	1.2722E+04
2500 eV	156.2	246.7	372.6	2123