

Supporting Information for

Spatially Resolved Functional Group Analysis of OLED Materials using EELS and ToF-SIMS

Kyun Seong Dae,¹ Kyung Soon Jang,¹ Chang Min Choi,^{2} and Jae Hyuck Jang^{1,3*}*

¹ Center for Research Equipment, Korea Basic Science Institute, Daejeon, Republic of Korea

² Center for Scientific Instrumentation, Korea Basic Science Institute, Cheongju, Republic of Korea

³ Graduate School of Analysis Science and Technology, Chungnam National University, Daejeon, Republic of Korea

Corresponding Author

* E-mail: cmchoi@kbsi.re.kr, jhjang@kbsi.re.kr

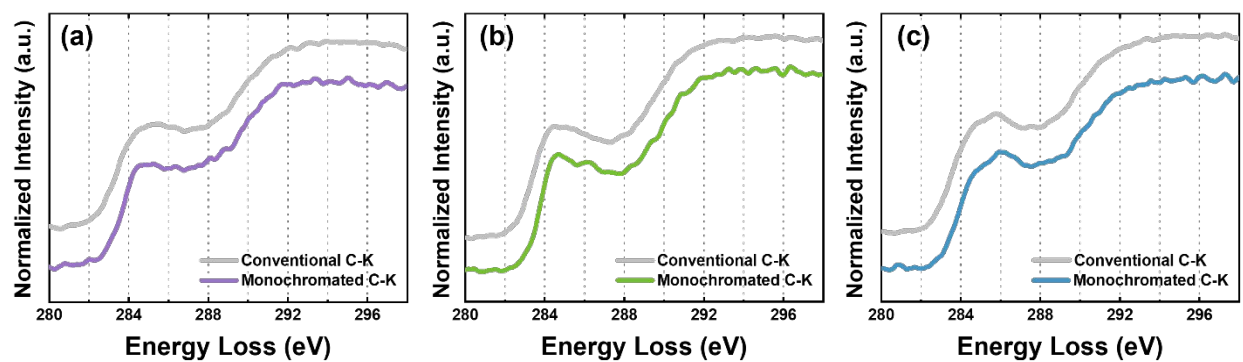


Figure S1. Monochromated and conventional C *K* edges for (a) TPBi, (b) TAPC, and (c) Alq3 organic layers. For C *K* edges, the use of monochromator with an energy-selecting slit enhances the characteristic C1 peak of the C *K* edges, providing clarity in the spectral features.

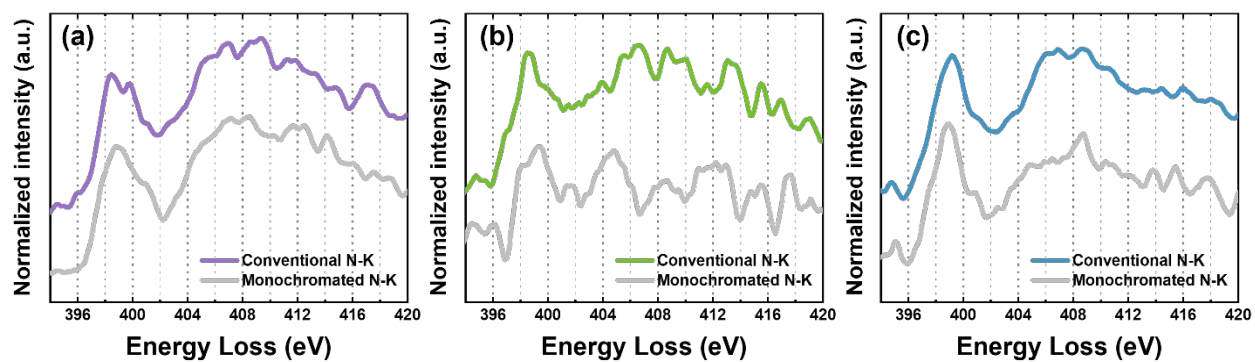


Figure S2. Monochromated and conventional N K edges for (a) TPBi, (b) TAPC, and (c) Alq3 organic layers. For N K edges, the use of monochromator with an energy-selecting slit reduces the apparent splitting of the N1 and N2 peaks from the TPBi due to the low signal-to-noise ratio of nitrogen in the organic layers.

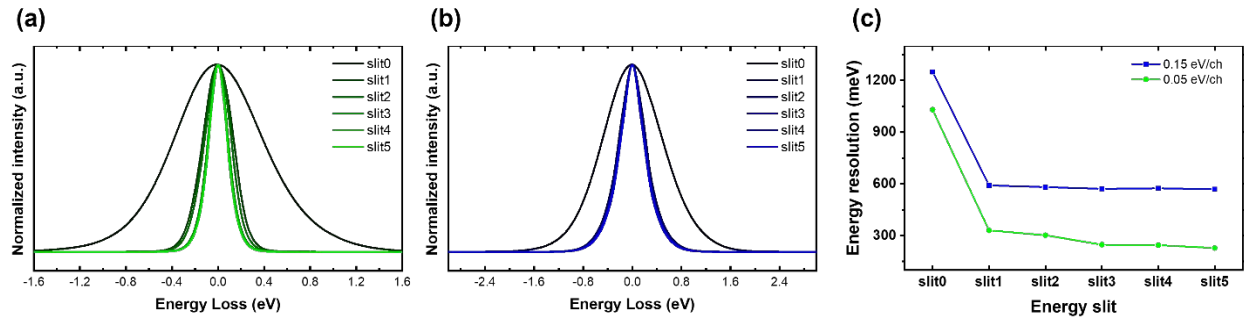


Figure S3. Effect of monochromation using different energy-selecting slit with the dispersion of (a) 0.05 eV/channel and (b) 0.15 eV/channel. The energy resolution profiles are shown for both dispersion setups against the energy-selecting slit width, illustrating narrow energy-selecting slits enhance the spectral resolution in EELS measurements.

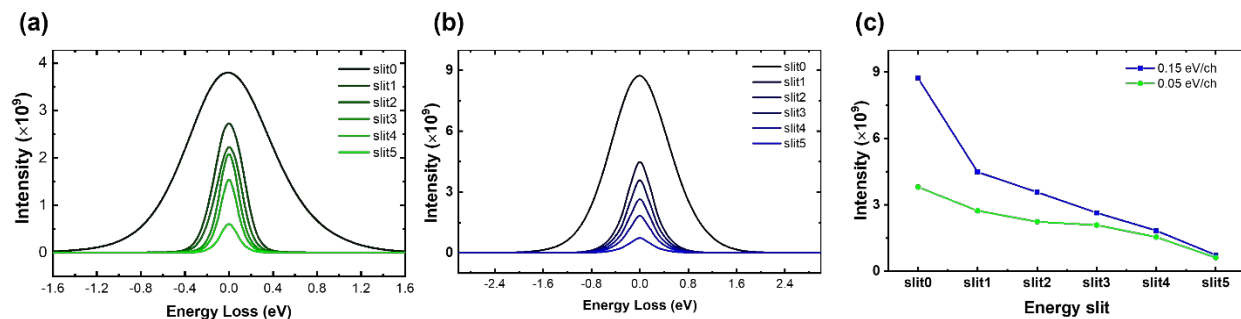


Figure S4. Effect of monochromation using different energy-selecting slit with the dispersion of (a) 0.05 eV/channel and (b) 0.15 eV/channel. The electron beam intensity profiles are shown for both dispersion setups against the energy-selecting slit width, illustrating that narrower energy-selecting slits reduce beam intensity.

Table S1. EELS measurement results for energy resolution and electron beam intensity (Zero-loss intensity) using energy-selecting slit with different widths. Note that a higher slit number corresponds to a narrower slit width.

Energy-selecting slit		Slit 0	Slit 1	Slit 2	Slit 3	Slit 4	Slit 5
Energy resolution (meV)	0.15 eV/ch	1155	523	491	483	471	462
	0.05 eV/ch	912	313	274	208	189	189
ZLP intensity ($\times 10^9$)	0.15 eV/ch	8.72	4.48	3.57	2.64	1.83	0.73
	0.05 eV/ch	3.80	2.73	2.23	2.08	1.54	0.61