# Breakdown of Kasha's Rule in a Ubiquitous, Naturally Occurring, Wide Bandgap Aluminosilicate (Feldspar)

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## Supplementary information (SI)


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Figure SI-1

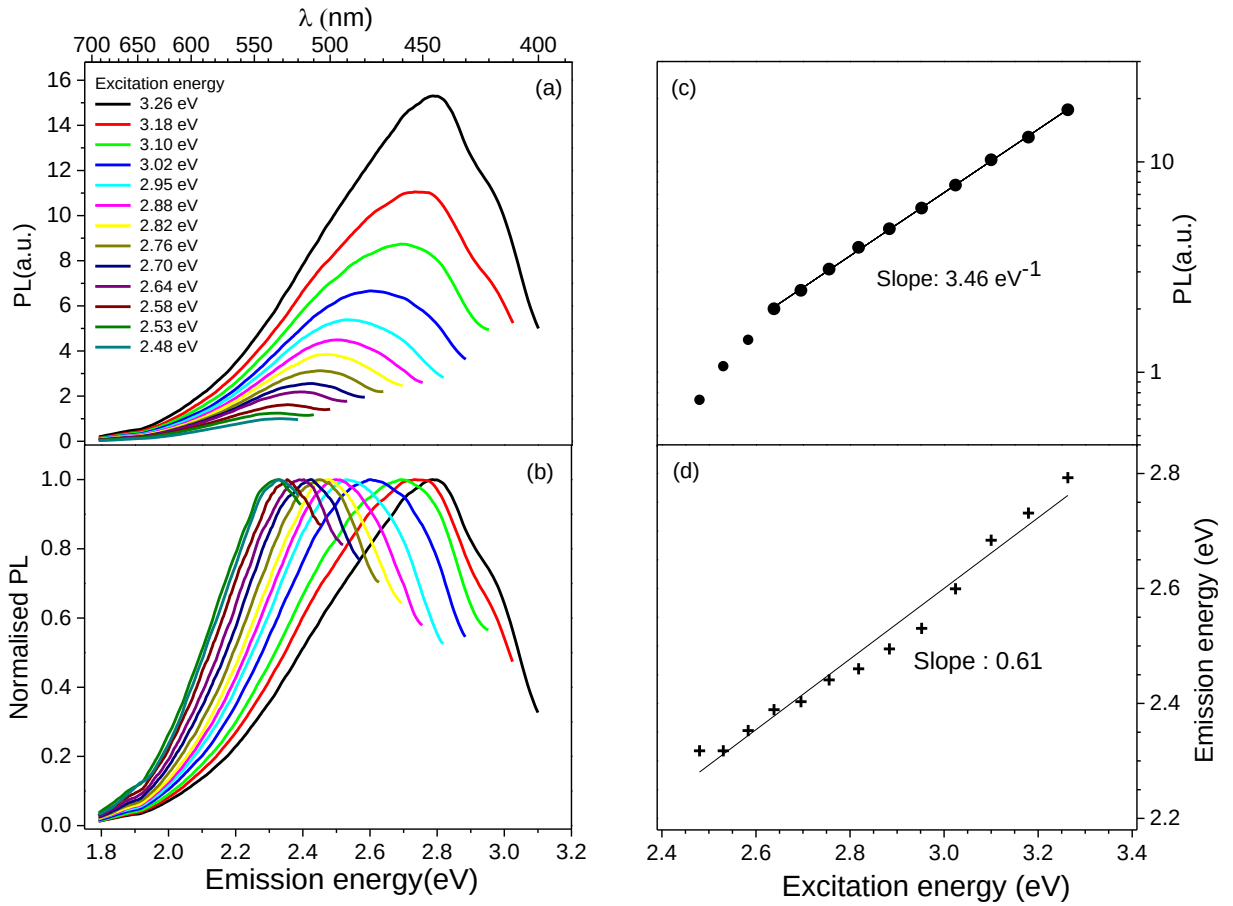


**Figure SI-1.** Dependence of PL emission on the excitation energy in sample **R28**.

(a) Excitation-energy-dependent emission (EDE) spectra, (b) Normalized curves (by peak intensity) of the data in (a), (c) log10 of the PL peak area plotted as a function of excitation energy. The slope calculated using the natural logarithm of the PL data are also shown, (d) the emission peak of PL spectra plotted as a function of the corresponding excitation energy, demonstrating the excitation-energy-dependent emission (EDE) effect.

Figure SI-2

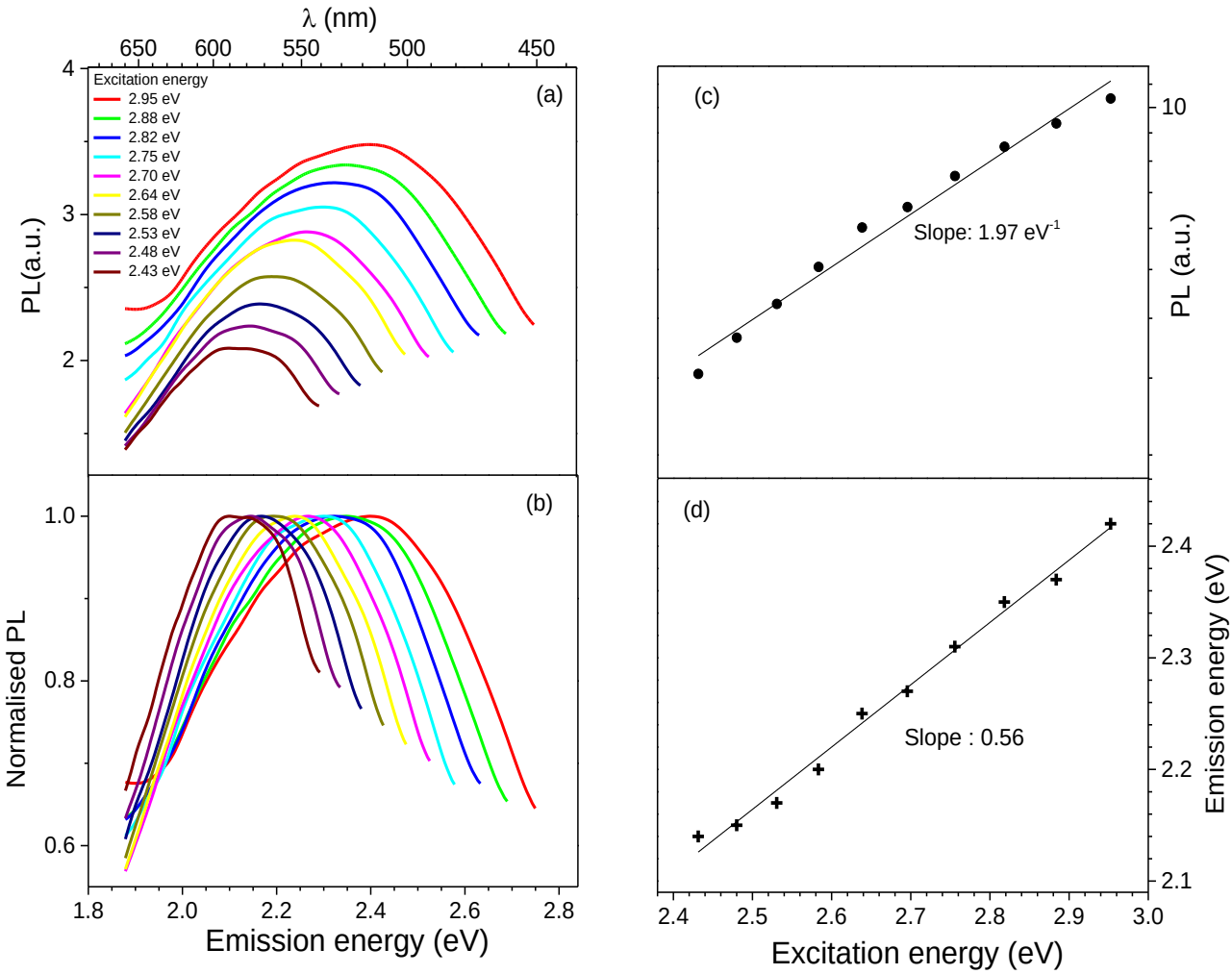


**Figure SI-2.** Dependence of PL emission on the excitation energy in sample **R47**.

(a) Excitation-energy-dependent emission (EDE) spectra, (b) Normalized curves (by peak intensity) of the data in (a), (c) log10 of the PL peak area plotted as a function of excitation energy. The slope calculated using the natural logarithm of the PL data are also shown, (d) the emission peak of PL spectra plotted as a function of the corresponding excitation energy, demonstrating the excitation-energy-dependent emission (EDE) effect.

Figure SI-3

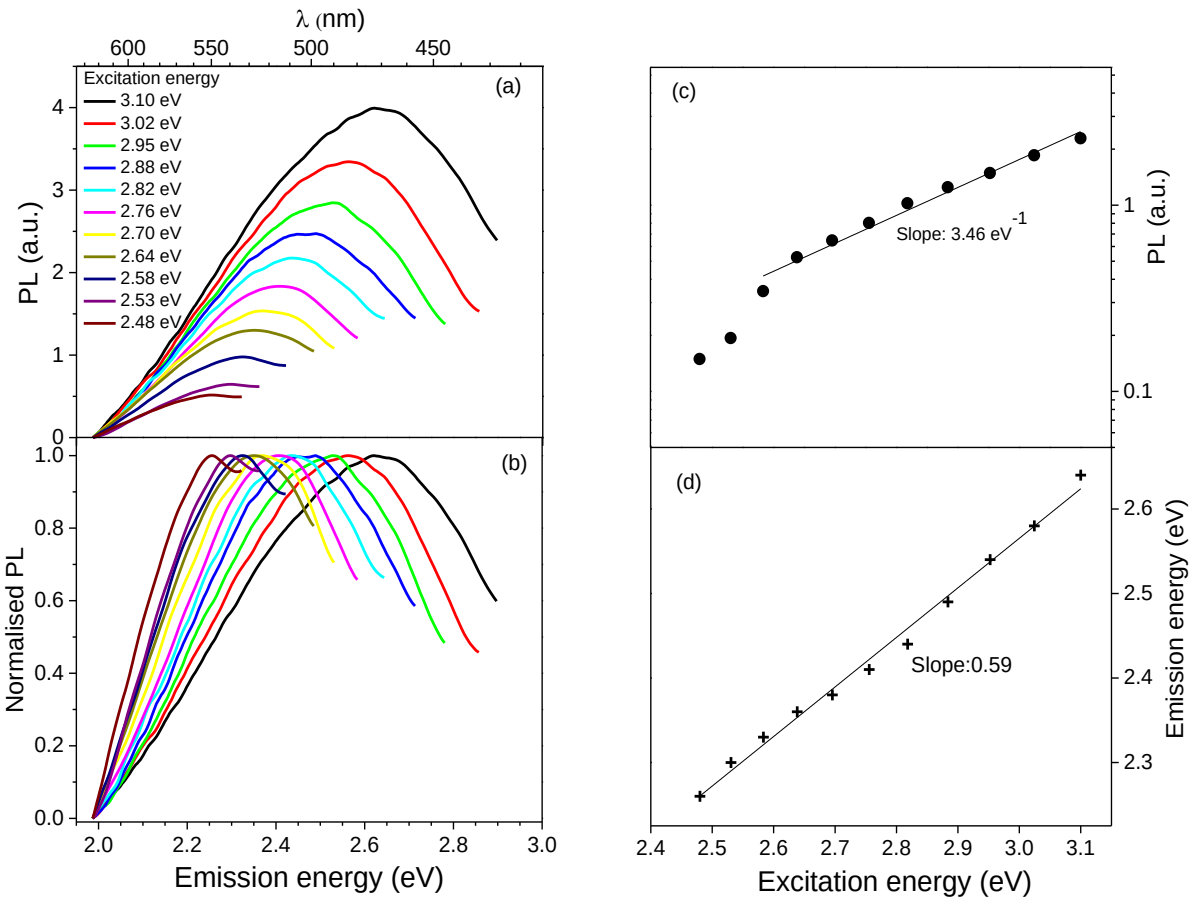


**Figure SI-3.** Dependence of PL emission on the excitation energy in sample **R57**.

(a) Excitation-energy-dependent emission (EDE) spectra, (b) Normalized curves (by peak intensity) of the data in (a), (c) log10 of the PL peak area plotted as a function of excitation energy. The slope calculated using the natural logarithm of the PL data are also shown, (d) the emission peak of PL spectra plotted as a function of the corresponding excitation energy, demonstrating the excitation-energy-dependent emission (EDE) effect.

Figure SI-4

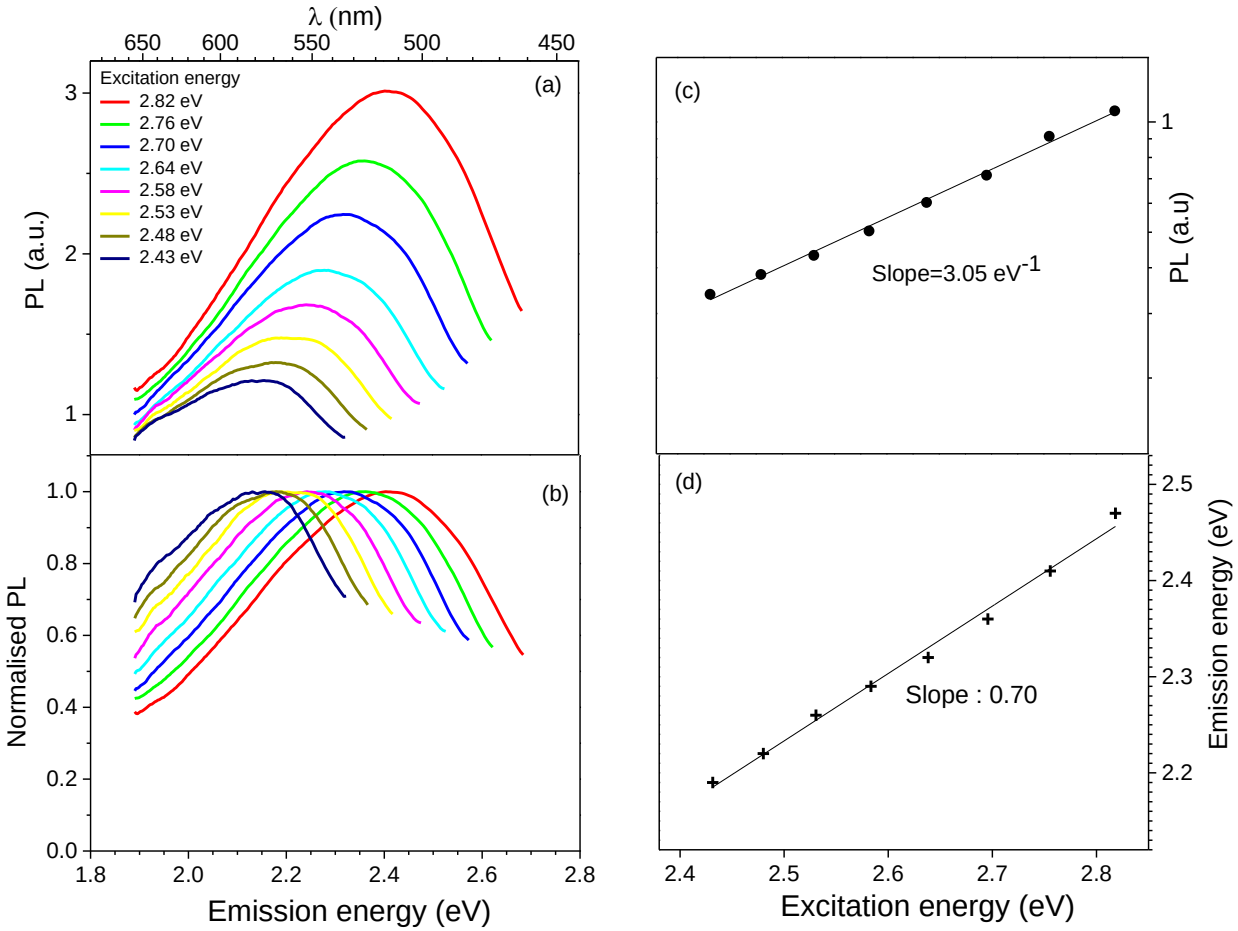


**Figure SI-4.** Dependence of PL emission on the excitation energy in sample **R58**.

(a) Excitation-energy-dependent emission (EDE) spectra, (b) Normalized curves (by peak intensity) of the data in (a), (c) log10 of the PL peak area plotted as a function of excitation energy. The slope calculated using the natural logarithm of the PL data are also shown, (d) the emission peak of PL spectra plotted as a function of the corresponding excitation energy, demonstrating the excitation-energy-dependent emission (EDE) effect.

Figure SI-5

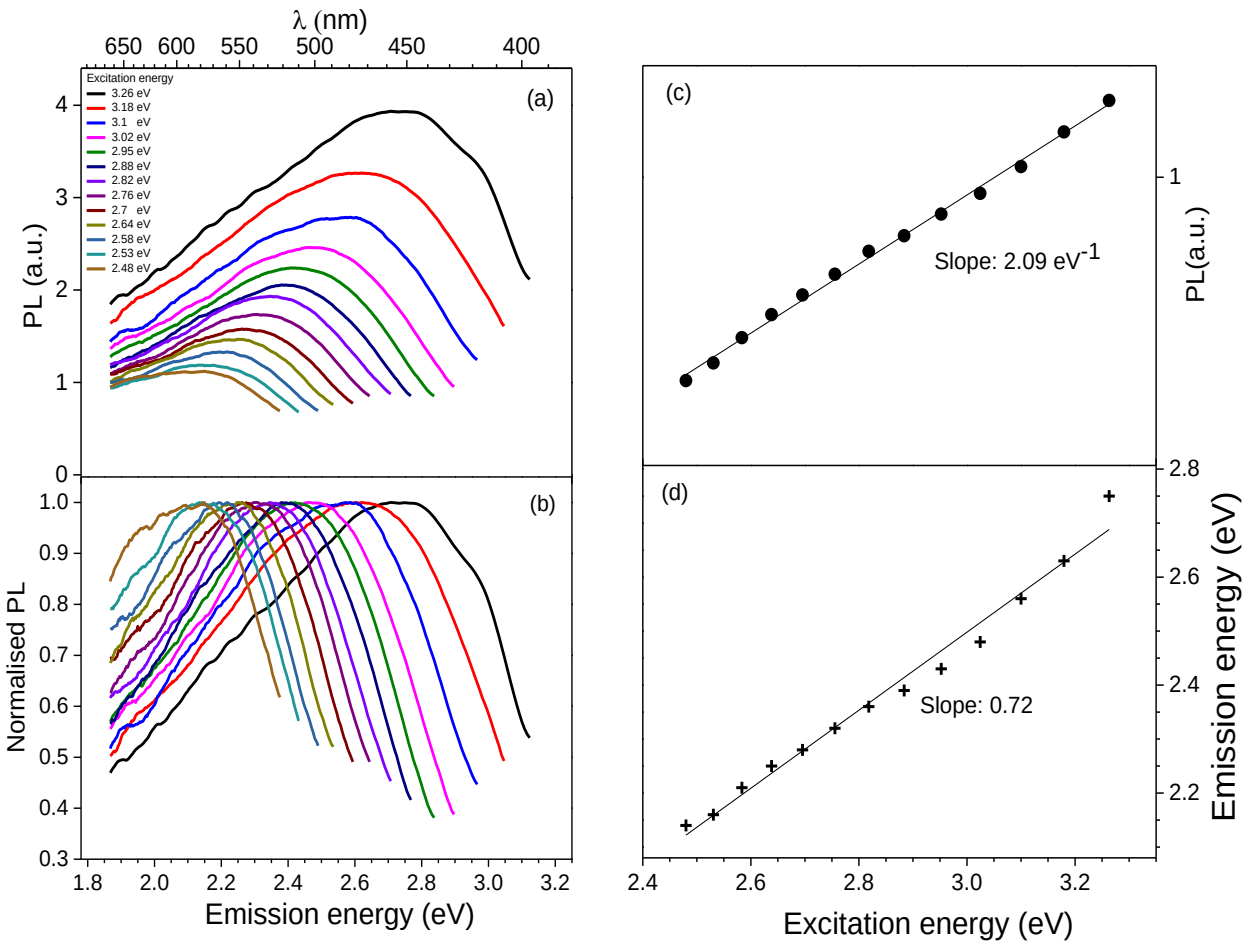


**Figure SI-5.** Dependence of PL emission on the excitation energy in sample **R65**.

(a) Excitation-energy-dependent emission (EDE) spectra, (b) Normalized curves (by peak intensity) of the data in (a), (c) log10 of the PL peak area plotted as a function of excitation energy. The slope calculated using the natural logarithm of the PL data are also shown, (d) the emission peak of PL spectra plotted as a function of the corresponding excitation energy, demonstrating the excitation-energy-dependent emission (EDE) effect.

Figure SI-6

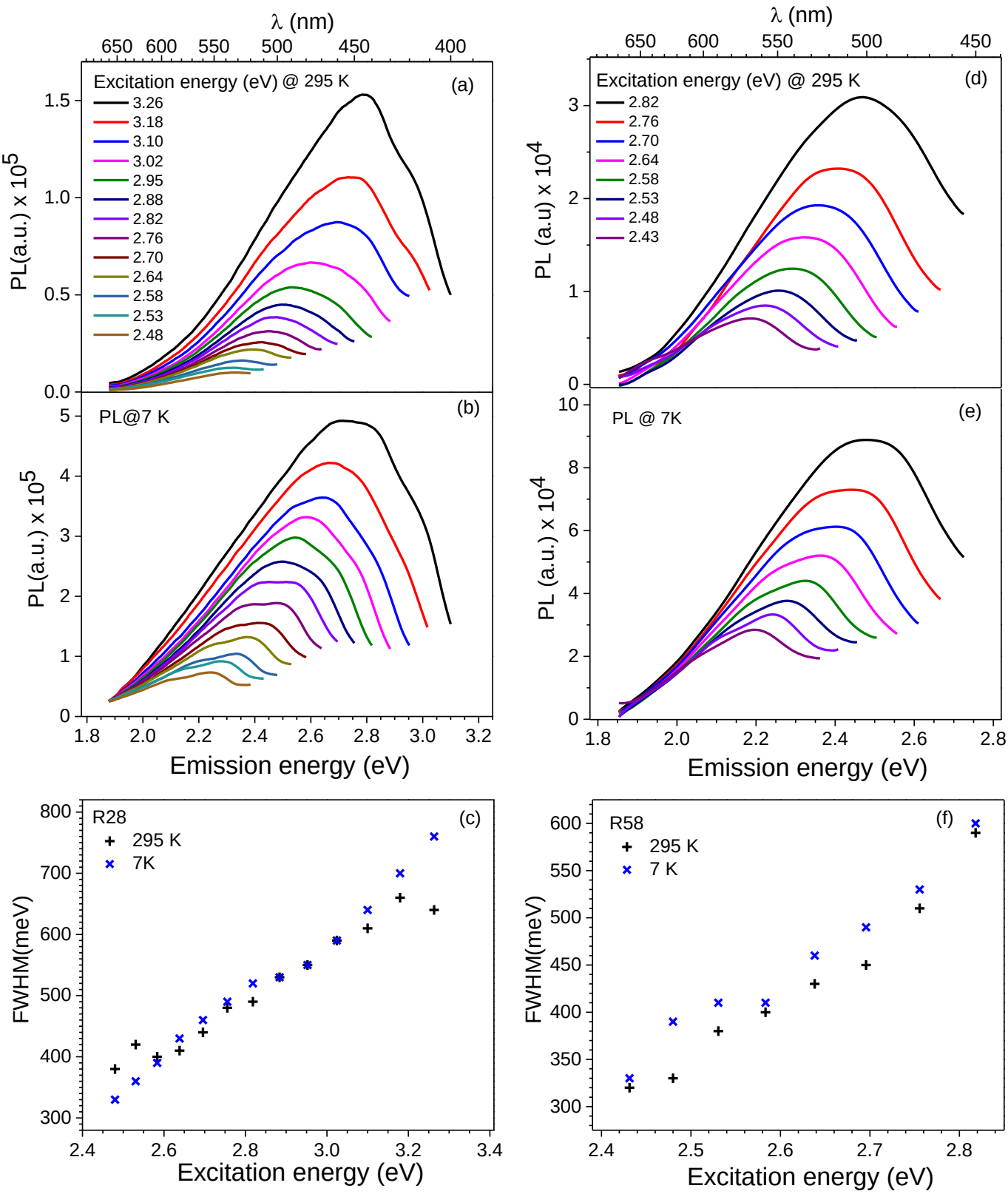


**Figure SI-6:** EDE at 7 K or 295 K. The left column shows results from R28 whereas the right column shows results from R58. (a) and (d): EDE at 295 K. (b) and (e) EDE at 7 K. (c) and (f): Full width at half maximum (FWHM) derived from the data shown above for 7 K or 295 K.