Electronic Suplementary Information to

Temperature effect on electron-vibrational modes coupling of a fully conjugated polyfluorene derivative.

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Fig. SI1 shows the normalized absorbance spectrum in UV-Vis range for LaPPS16 OLED. The maximum of the transition $\pi \rightarrow \pi^*$ is ~400nm.

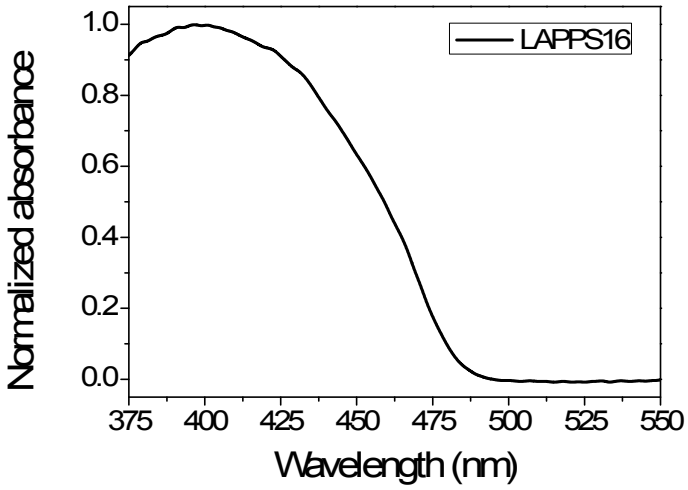

Fig. SI1. Normalized absorbance spectrum of LaPPS16.

In order to evaluate the possible active optical vibrational modes of LaPPS16, Fig. SI2 shows the FTIR spectrum that can be divided in three main regions: (i) 1410-1600 cm^{-1} – vinylene coupled stretch of C=C, vinylene stretch C-H and ring stretch C=C, (ii) 1170-1200 cm^{-1} - ring stretch C-C and, (iii) 700-900 cm^{-1} - out-of-plane vinylene C-H.

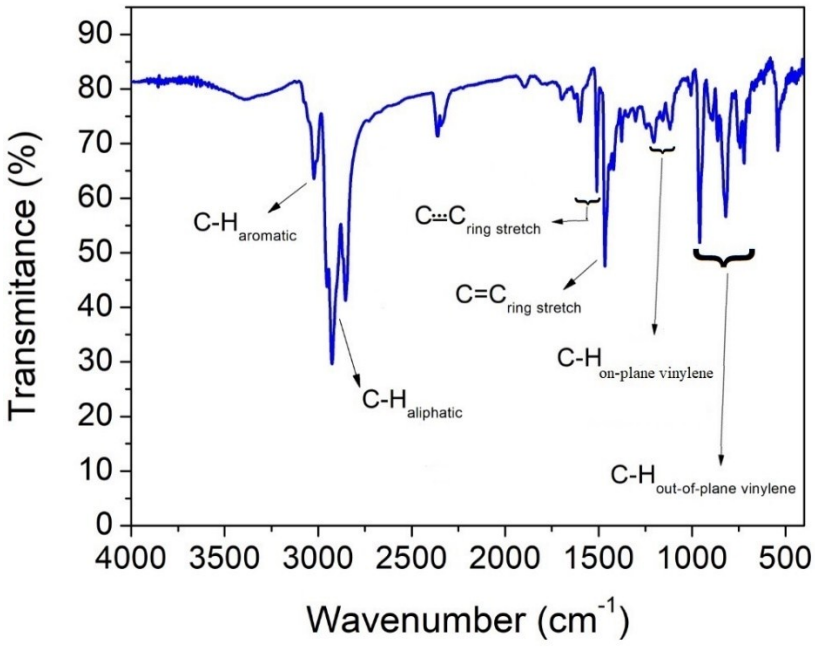

Fig. SI2. FTIR spectrum (KBr) of LaPPS16.

The theoretical adjust of the photoluminescence spectra to LAPPS16 in function of temperature using Equation 1 are given below in Fig. SI3.

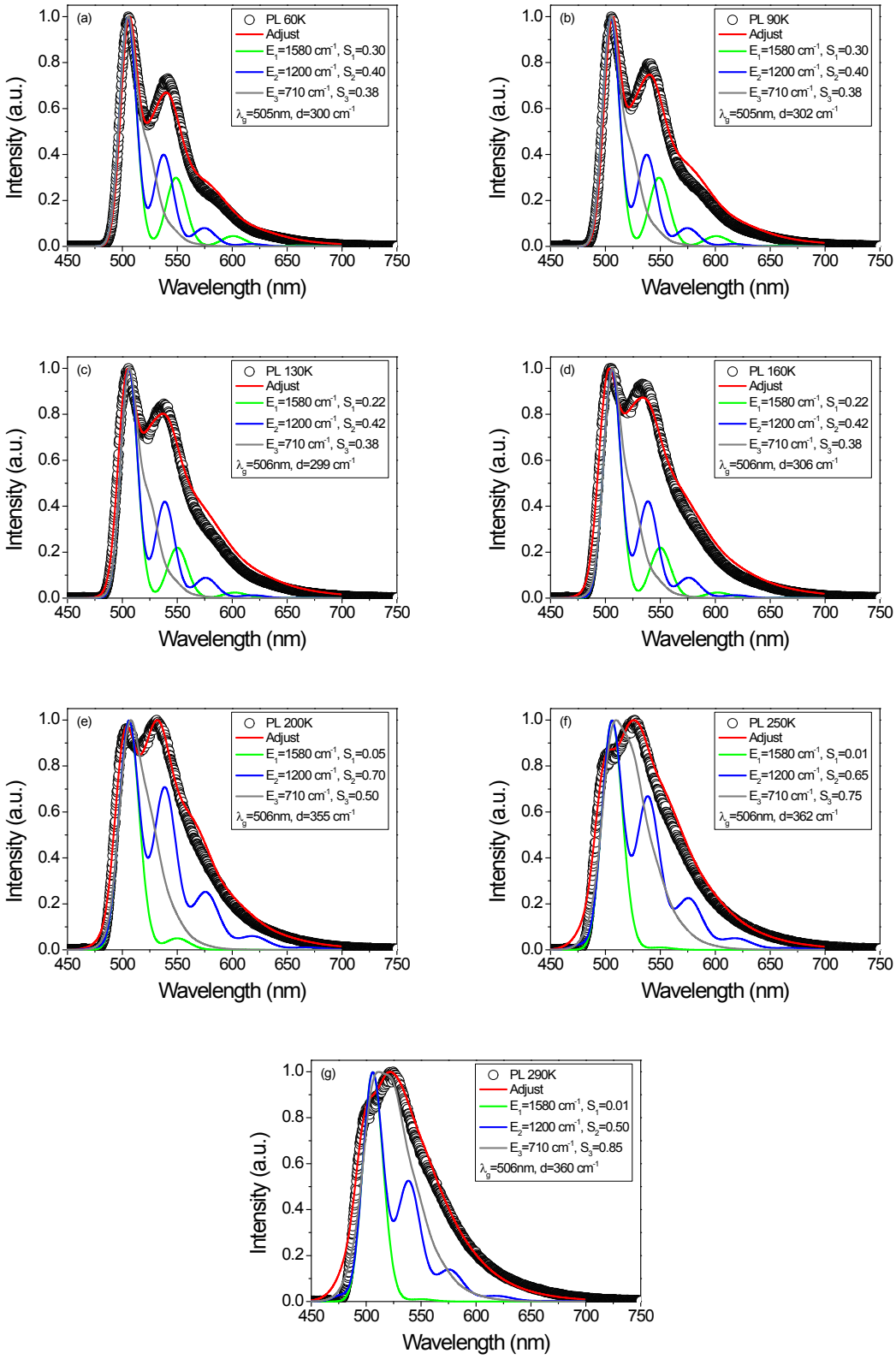

Fig. SI3. (a) 60 K, (b) 90 K, (c) 130 K, (d) 160 K, (e) 200 K, (f) 250 K, and (g) 290 K theoretical adjust of t photoluminescence spectra of the LAPPS16.

The current curves in function of diode direct voltage (Fig. SI4) presented similar lines for all sample temperatures, showing good electrical stability. Through these curves, we can determine the threshold voltage of the device in function of temperature by drawing tangent lines from the maximum values of the curves. This threshold voltage is the one from which the diode conducts completely. The threshold voltage was approximately 10 to 11 V in the temperature range from T = 290 to 60 K, respectively. This result shows that the load transport mechanisms with the temperature variation did not significantly alter the device performance, due to the low dependence of the electric current with the temperature of the sample.

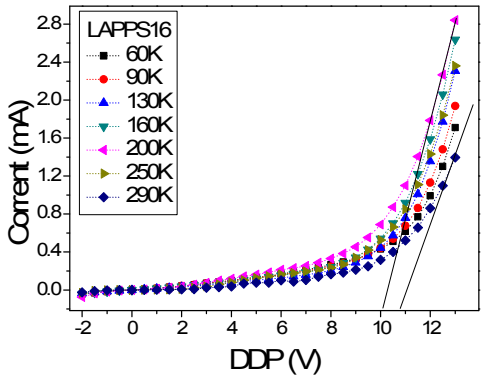

Fig. SI4. Characteristic current *vs* ddp in function of LaPPS16 OLED temperature.

The theoretical adjust of the electroluminescence spectra to LAPPS16 OLED device in function of temperature using equation 1 are given below in Fig. SI5.

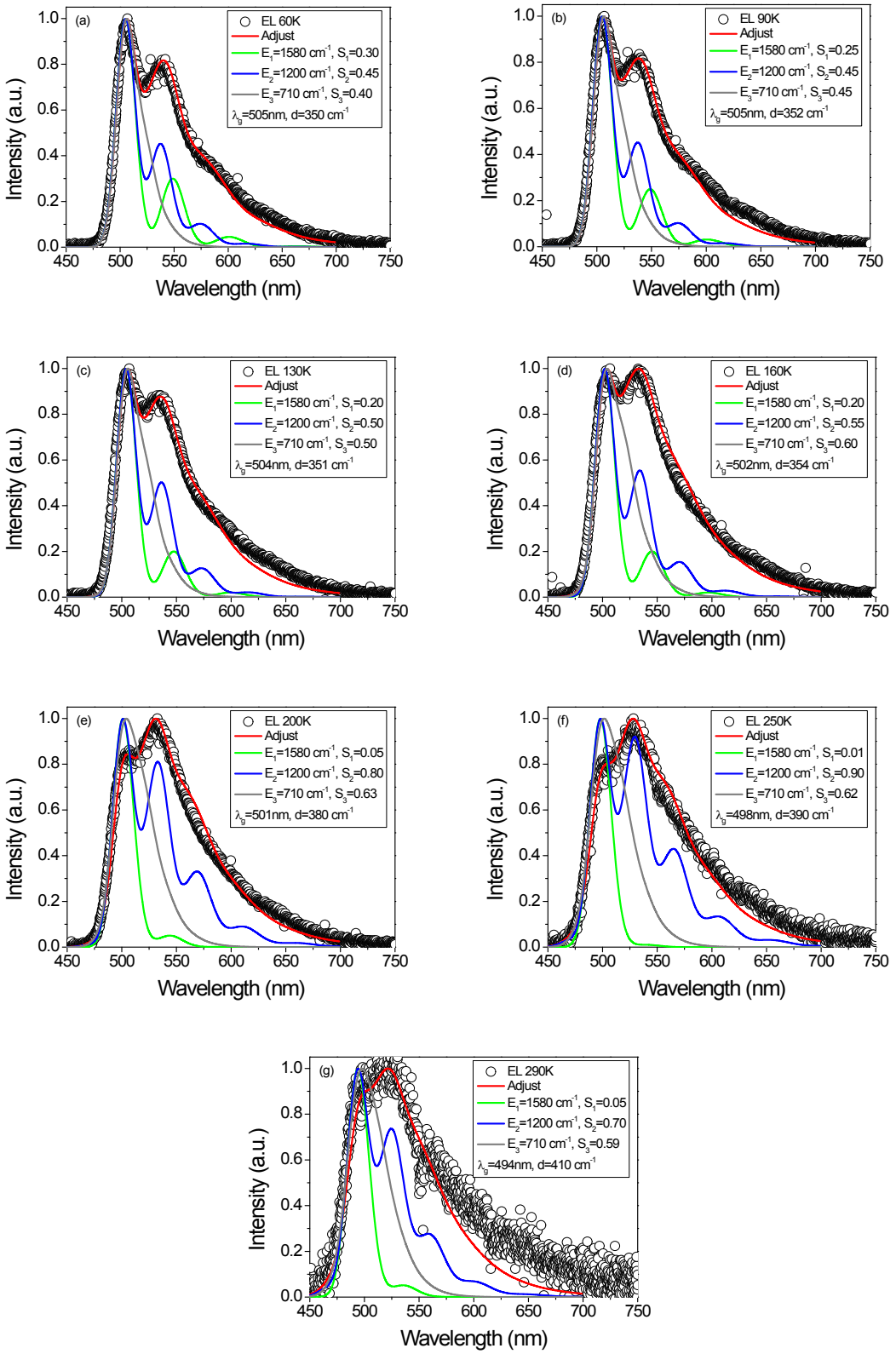

Fig.SI5. (a) 60 K, (b) 90 K, (c) 130 K, (d) 160 K, (e) 200 K, (f) 250 K, and (g) 290 K theoretical adjust of electroluminescence spectra of the LAPPS16 OLED device.