

Supporting Information

Highly Luminescent Langmuir-Blodgett Films of Amphiphilic Ir(III) Complexes for an Application of Gas Sensing

Hisako Sato^{1,2*}, *Kenji Tamura*³, *Masahiro Taniguchi*⁴ and *Akihiko Yamagishi*^{6*}

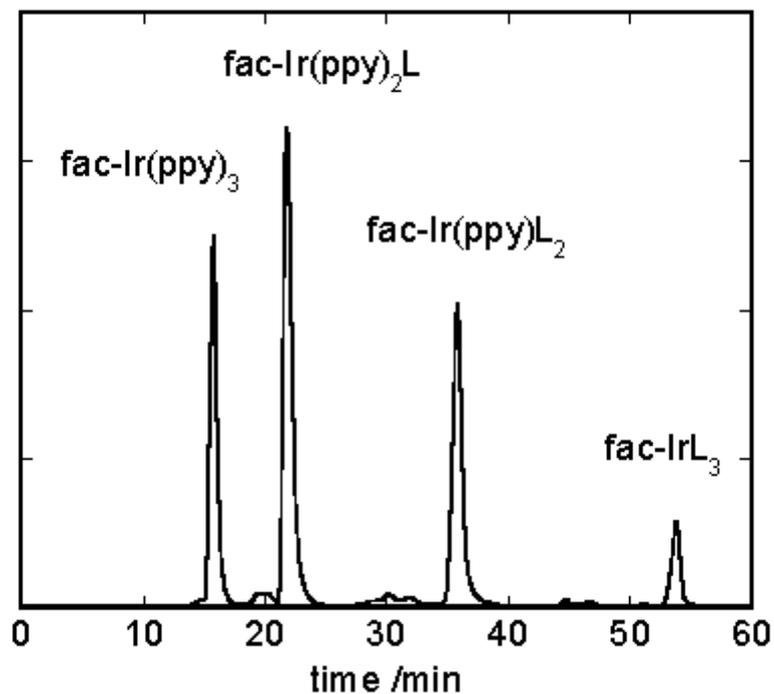


Figure S1. HPLC chromatogram for separating four kinds of iridium(III) complexes, $fac-[Ir(ppy)_{3-n}L_n]$ ($n = 0 \sim 3$). An eluting solvent was 3:1(v/v) methanol-chloroform. Monitoring was made at 400 nm.

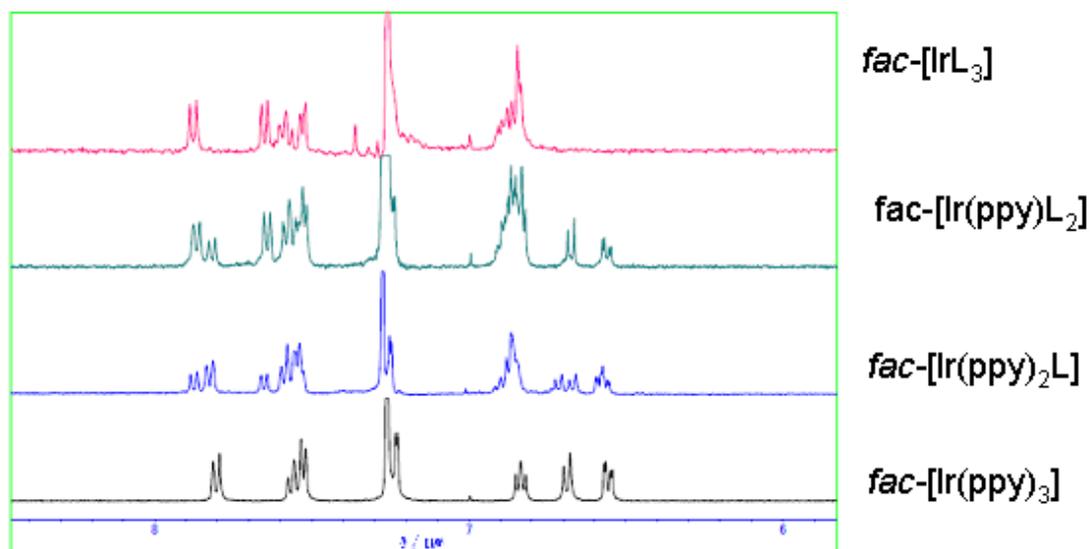


Figure S2. ¹H-NMR spectra of CDCl₃ solutions of [Ir(ppy)_{3-n}L_n] (n = 0 ~ 3) complexes in the aromatic region.

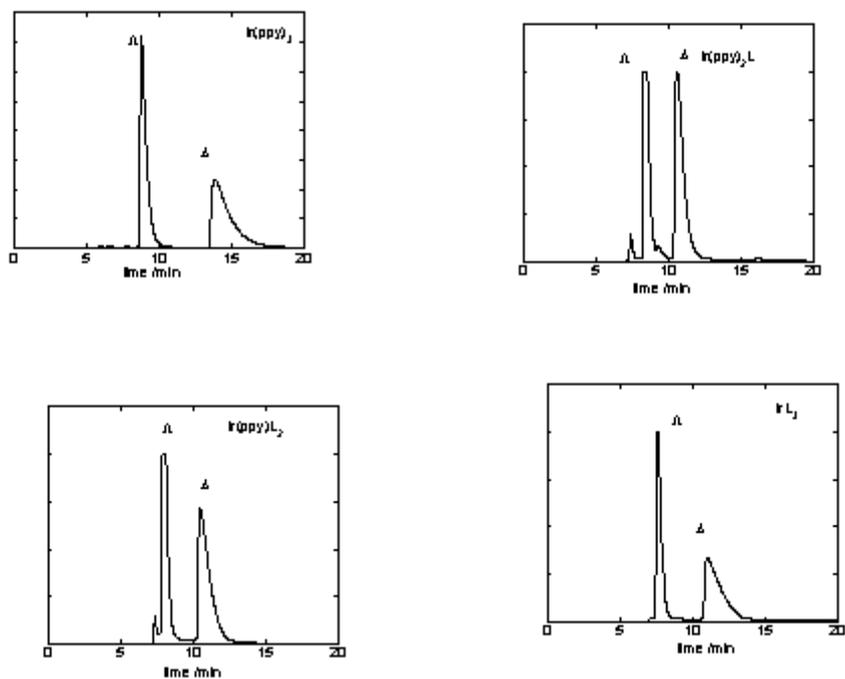


Figure S3. HPLC chromatograms for resolving four kinds of iridium(III) complexes: (1) *fac*-[Ir(ppy)₃], (2) *fac*-[Ir(ppy)₂L], (2) *fac*-[Ir(ppy)L₂] and (4) *fac*-[IrL₃]. An eluting solvent was 2:1(v/v) hexane-dichloromethane. Monitoring was made at 400 nm.

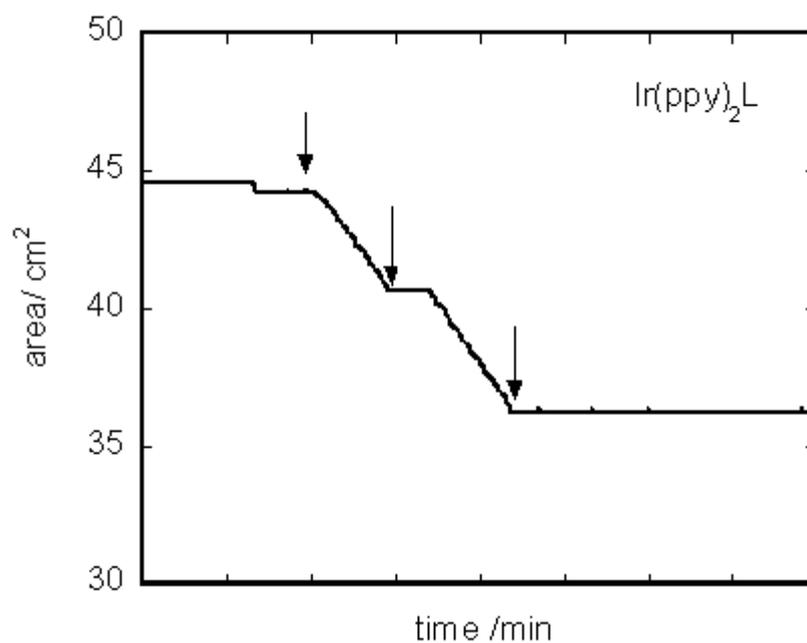


Figure S4. The plot of the trough area versus time when a floating monolayer of $[\text{Ir}(\text{ppy})_2\text{L}]$ was transferred onto a hydrophobic glass plate. The arrows indicated either the start or the end of deposition.

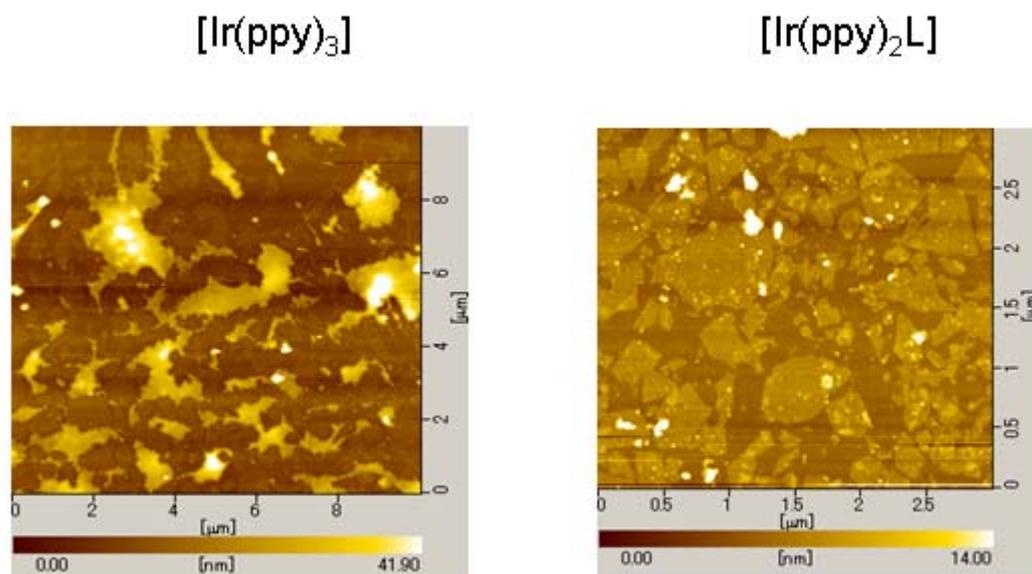


Figure S5. The AFM images of the LB films of iridium(III) complexes deposited onto a hydrophobic glass plate: (right) *fac*- $[\text{Ir}(\text{ppy})_3]$ and (left) *fac*- $[\text{Ir}(\text{ppy})_2\text{L}]$. Deposition was made at 10 mNm^{-1}

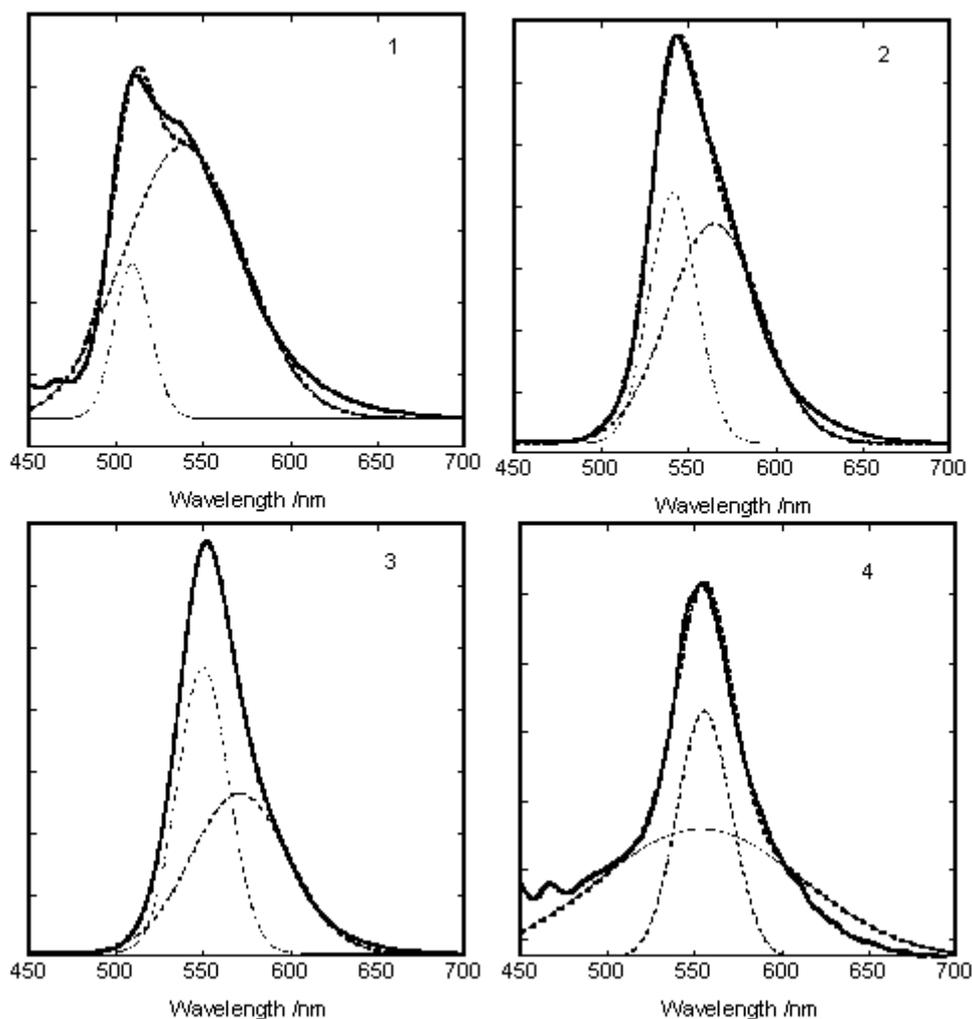


Figure S6. The luminescence spectra (solid curves) of the cast films of iridium(II) complexes: (1) *fac*-[Ir(ppy)₃], (2) *fac*-[Ir(ppy)₂L], (2) *fac*-[Ir(ppy)L₂] and (4) *fac*-[IrL₃]. The dotted lines are the computational results when the observed band was decomposed into several composites. The horizontal axis is the intensity of luminescence at an arbitrary unit. Excitation wavelength was 430 nm.

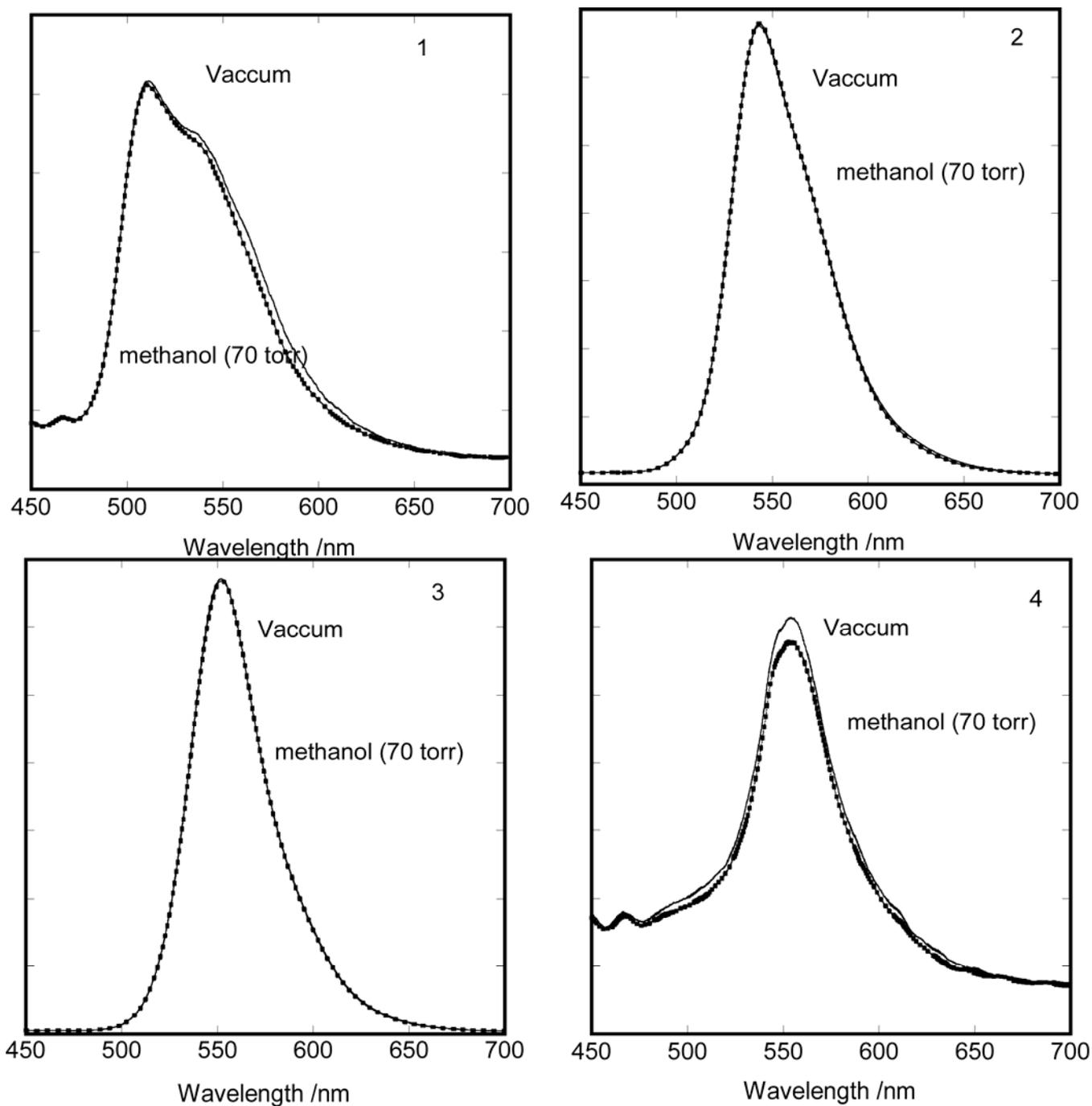


Figure S7. The effect of methanol vapor on the luminescence spectra of the cast films of iridium(II) complexes: (1) $fac-[Ir(ppy)_3]$, (2) $fac-[Ir(ppy)_2L]$, (2) $fac-[Ir(ppy)L_2]$ and (4) $fac-[IrL_3]$. The vapor pressure of methanol vapor was 70 mmHg. The horizontal axis is the intensity of luminescence at an arbitrary unit. Excitation wavelength was 430 nm.