Electronic Supplementary Material (ESI) for Journal of Materials Chemistry C

Supplementary Information for:

High-performance pure blue phosphorescent OLED using a novel bis-heteroleptic iridium(III) complex with fluorinated bipyridyl ligands.

Florian Kessler,*[a,b] Yuichiro Watanabe,[c] Hisahiro Sasabe,*[c,d] Hiroshi Katagiri,[d] Md. Khaja Nazeeruddin,[a] Michael Grätzel[a] and Junji Kido[c,d]

[a] *Laboratory of Photonics and Interfaces, Institute of Chemical Sciences and Engineering, School of Basic Sciences, École Polytechnique Fédérale de Lausanne, CH-1015 Lausanne, Switzerland.*

[b] *Present Address: Siemens AG, Corporate Technology, CT RTC MAT MPV, Günther-Scharowsky Strasse 1, D-91058 Erlangen, Germany. E-mail: florian.kessler@siemens.com*

[c] *Department of Organic Device Engineering, Graduate School of Science and Engineering, Yamagata University, Yonezawa, Yamagata, 992-8510 Japan. E-mail: h-sasabe@yz.yamagata-u.ac.jp*

[d] *Research Center for Organic Electronics (ROEL), Yamagata University, Yonezawa, Yamagata, 992-8510 Japan.*

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Experimental procedures

General considerations. [1]H NMR spectra were recorded using a Bruker AV 400 MHz spectrometer. Chemical shifts δ (in ppm) are referenced to residual solvent peaks. Coupling constants are expressed in hertz (Hz). Voltammetric measurements employed a PC controlled AutoLab PSTAT10 electrochemical workstation and were carried out in an Ar-filled glove box, oxygen and water < 5 ppm. All experiments were realized using 0.1M $TBAPF_6$ in anhydrous DMF as electrolyte using a set of carbon glassy and two Pt wires as working, counter and reference electrode, respectively. Ferrocene was used as internal standard. A scan rates are of 100 $mV.s^{-1}$ has been applied. Before each measurement, samples were stirred for 15s and left to equilibrate for 5s.

Electrochemistry

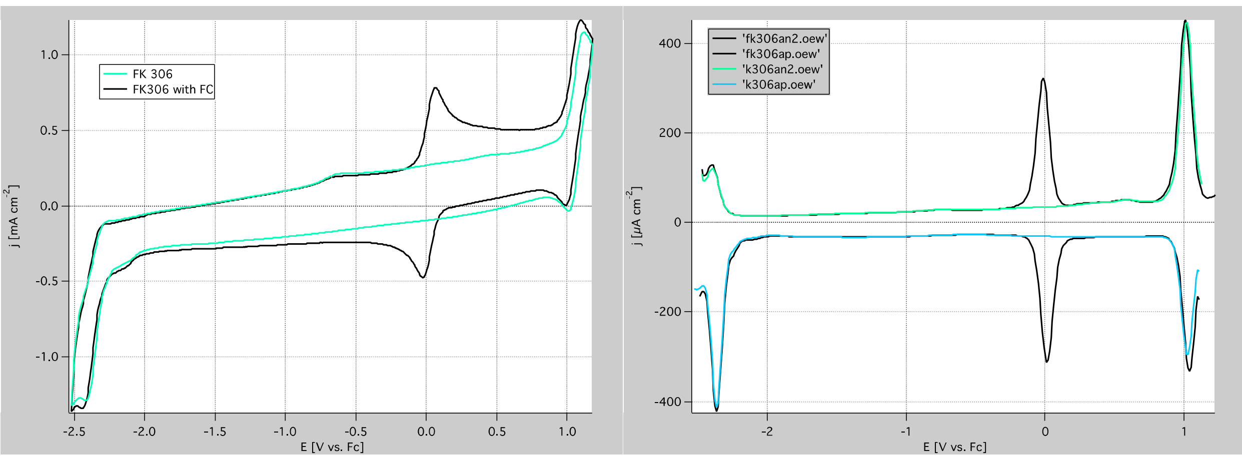

Figure S1: Cyclic Voltametry (CV, left) and Differential Pulse Voltametry (DPV, right) of **FK306**.

Table S1. Summary of OLED performances.

Device	$\eta_{p,100}/\eta_{c,100}/V_{100}$/EQE [a] [lm W^{-1}/cd A^{-1}/V/%]	$\eta_{p,1000}/\eta_{p,1000}/V_{1000}$/EQE [b] [lm W^{-1}/cd A^{-1}/ V/%]	CIE$_{x,y}$ [c]	$J_{1/2}$ [d] [mA cm^{-2}]
mCP(11 wt%)	20.3/22.0/3.41/13.2	12.9/18.0/4.38/10.8	(0.16,0.24)	23.2
mCP(15 wt%)	24.2/26.1/3.39/15.3	16.1/21.5/4.20/12.7	(0.16,0.25)	36.6
mCP(20 wt%)	21.4/24.7/3.63/14.2	14.5/22.8/4.95/13.2	(0.16,0.26)	38.9

[a] Power efficiency (PE), current efficiency (CE), voltage (V) and external quantum efficiency (EQE) at 100 cd m^{-2}. [b] PE, CE, V and EQE at 1000 cd m^{-2}. [c] Commission Internationale de L'Eclairage coordinates at 100 cd m^{-2}. [d] Current density at half the maximum EQE.

ITO (130)/TAPC (40)/**FK306** 11–20 wt% doped mCP (10)/ B3PyPB (50)/LiF (0.5)/Al (100)

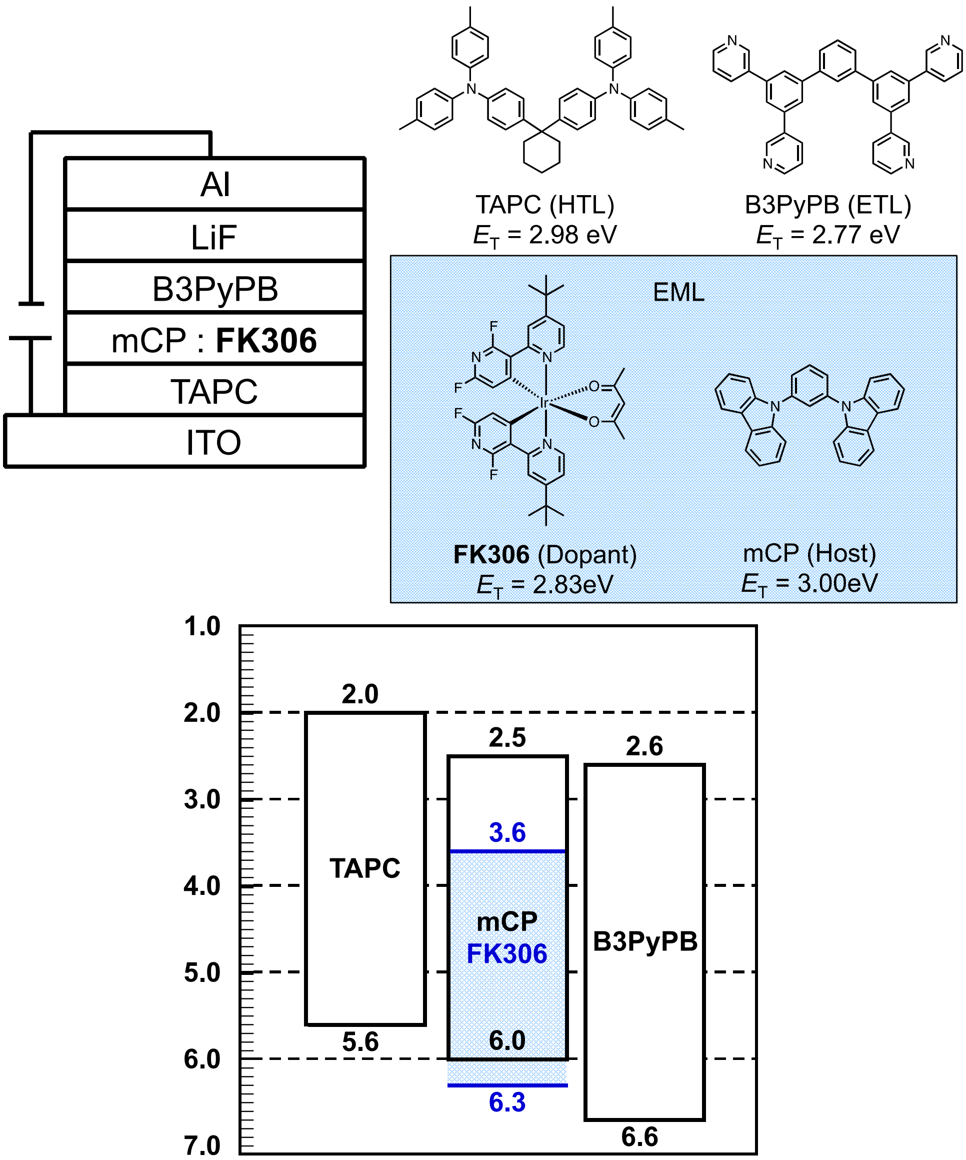

Figure S2: Device Stack, Structures of Materials and Energy levels.

^{1}H NMR Spectra

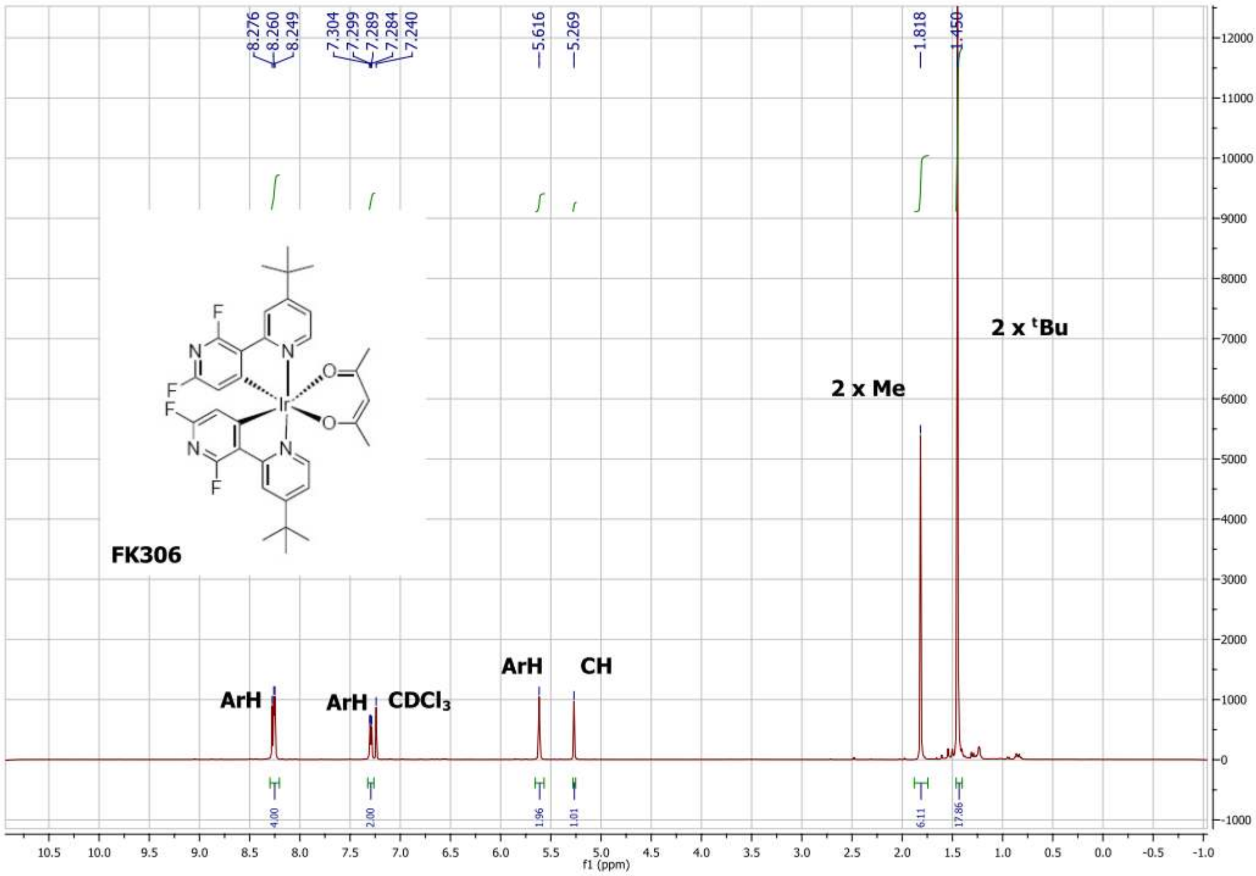

Figure S3: ^{1}H NMR Spectra of **FK306** before sublimation ($CDCl_3$, 400 MHz).

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