

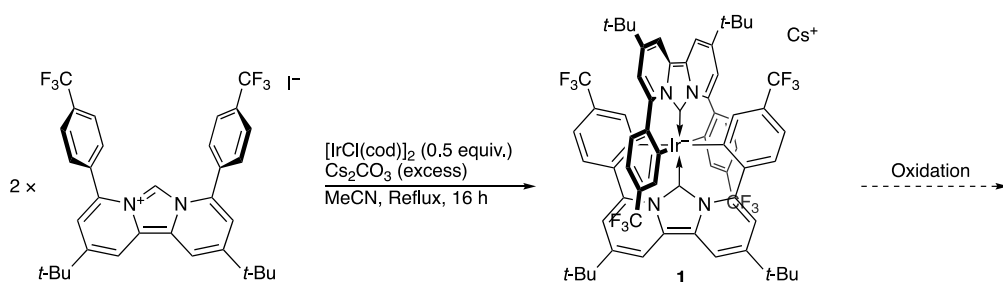
Toward Iridium Complexes with High Oxidation States through All-carbon Ligated Pincer Ligand-type Aryl-substituted Dipyrido-annulated Carbenes

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Iridium complexes favor the oxidation state of I and III in the view of d-orbital splitting. At an oxidation state of IV, Ir is a 17-electron radical species, which is readily reduced to an 18-electron Ir(III) center. Thus, isolation of iridium complexes with oxidation state of IV remains challenging and usually required π -donating ligands such as amino/imino, alkoxide, and halide¹. However, structural characterization of Ir(IV) complexes bearing carbon-based ligands has not been achieved yet.

Previously, our group established the introduction method of various substituents such as aryl groups at 4,8-positions of dipyrido-annulated carbenes which have high π donating properties². Herein, we will present the complexation of our carbene as a pincer ligand toward an iridium, which afforded all-carbon ligated anionic Ir(III) complex (**1**) via quadruple C–H activation. The cyclic voltammetry indicated that complex **1** was readily oxidized in air, which afforded the NMR-silent Ir(IV) complex. The redox behaviors by chemical oxidants were investigated.



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