**Phosphorescent iridium(III) complexes with different N^N ligands as pH-sensors**

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Improper pH in biological cells may be an indicator of severe pathologies, for example, tumors. So, nowadays developing methods of pH monitoring in living cells is a very important field of research. Luminescent sensors are convenient to use due to their particularly high sensitivity to changes in acidity.[1] One of the most perspective methods in luminescent bioimaging is PLIM (phosphorescence lifetime imaging). Insertion of pH-sensitive fragments into coordinated ligands allows to use transition metal complexes as pH-sensors in PLIM. Many octahedral iridium (III) complexes meet such requirements for phosphorescence sensors as large Stokes shift, emission in red or near-infrared region, solubility in biological environment, redox and photobleaching stability.[2] Thus, we focused on study of cyclometalated Ir(III) phosphorescent complexes in our research.

In this work, 8 novel phosphorescent iridium complexes with different N^N ligands were synthesized and characterized (Fig. 1). Study of their photophysical properties, such as emission and absorption, proved that these complexes exhibit effective emission in methanol solution. Measurements of phosphorescence’s lifetime showed the dependence of the lifetime on the solution’s pH, which makes it possible to use these compounds as pH-sensors in PLIM.



Figure 1. Synthesis of the complexes C1-C8 and structures of the N^C and N^N ligands

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**References**

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