

## Iridium complexes to fight cancer: from darkness to light.

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**Topic:** Old Elements, New Technologies: how to improve the quality of life

### Abstract:

Discovered for the first time in 1803, iridium received its name from the Greek goddess of the rainbow, Iris, because of the striking and diverse colours of its salts. One hypothesis is that this metal came to earth on the asteroid which caused the extinction of the dinosaurs 66 million years ago. Luminescent Ir(III) complexes have found increasing use in multiple areas of science and technology, including in photochemistry, light-emitting devices and photoredox catalysis, and there is an increasing interest in developing Ir(III) based compounds with biomedical purposes.<sup>1</sup> Thus, iridium has become as an alternative to platinum based antitumor drugs (used in more than 50 percent of cancer chemotherapies) due to this precious metal could provide new targeted drugs which attack cancer cells in completely new ways and combat resistance and side-effects.<sup>2</sup> Photodynamic therapy (PDT), using light to control drug activity along an adaptable time span at a specific space, is fast emerging as a viable, effective, and non-invasive treatment, and cyclometalated Ir(III) complexes are recently attracting much attention as possible PDT agents due to their convenient tunable photophysical and photochemical properties.<sup>1,3</sup> Herein, we will present our recent results on the synthesis and biological evaluation of different bis-cyclometalated Ir(III) complexes. Modifying the cyclometalated ligand and/or ancillary ligand we can tune their photophysical properties and their antitumoral activity. Thus, some of them are very active in several cancer cell lines in the dark while others, are able to activate by irradiation with blue light.



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### References

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