

# セミナー

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### “The Emergence of Aqueous Chemiluminescence: New Promising Class of Phenoxy 1,2-Dioxetanes”

#### Abstract:

Chemiluminescence probes are considered to be among the most sensitive diagnostic tools that provide high signal-to-noise ratio for various biological applications. We have developed a new molecular methodology to design and foresee light-emission properties of turn-ON chemiluminescence dioxetane probes suitable for use under physiological conditions. The methodology is based on incorporation of a substituent on the benzoate species obtained during the chemiexcitation pathway of a phenoxy-dioxetane probe. The substituent effect was initially evaluated on the fluorescence emission generated by the benzoate species and then on the chemiluminescence of the dioxetane luminophores. A striking substituent effect on the chemiluminescence efficiency of the probes was obtained when acrylate and acrylonitrile electron-withdrawing groups were installed. The chemiluminescence quantum yield of the best probe was more than three orders of magnitude higher than that of a standard, commercially available phenoxy-dioxetane probe. These are the most powerful chemiluminescence-dioxetane probes synthesized to date that are suitable for use under aqueous conditions. In addition, our probes are capable of providing high-quality chemiluminescence in vitro and in vivo images based on endogenous activity of native enzymes or bio-analytes. We anticipate that the strategy presented here will lead to development of efficient chemiluminescence probes for various applications in the field of sensing and imaging. This presentation, describes the insights that led us to develop these unprecedented luminophores and the historical perspective that led to the current generation of chemiluminescent phenoxy-dioxetane probes.

**日時 : 2018年 11月7日 (水) 10:30 ~ 11:45**

**場所 : 東京大学医学部 総合研究棟 13階 第6セミナー室**

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