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## Phosphorus, Sulfur, and Silicon and the Related Elements

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### Synthesis of $\mu$ -Oxobridged Phosphorus/Aluminum Heterodinuclear Porphyrins and the Fluorescence Behavior

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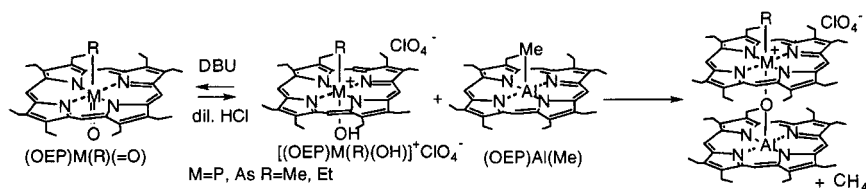
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## SYNTHESIS OF $\mu$ -OXOBRIDGED PHOSPHORUS/ ALUMINUM HETERODINUCLEAR PORPHYRINS AND THE FLUORESCENCE BEHAVIOR

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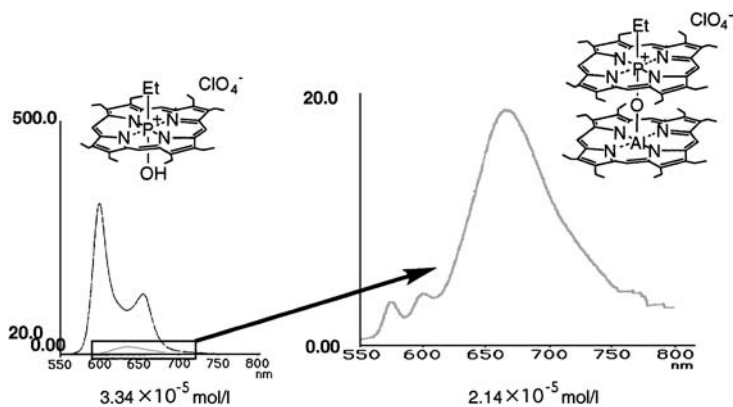
Recently we developed a new synthetic method of  $\mu$ -oxo bridged group 15 element/aluminum heterodinuclear porphyrin.<sup>1</sup> The method is based on the fact that the hydroxy proton of  $[(\text{OEP})\text{M}(\text{R})(\text{OH})]^+\text{X}^-$  ( $\text{M}=\text{P}, \text{As}$ ) is relatively acidic because of the formation of stable  $\text{M}=\text{O}$  double bonded compounds,  $(\text{OEP})\text{M}(\text{R})(=\text{O})$ . The acidic hydroxy group in  $[(\text{OEP})\text{M}(\text{R})(\text{OH})]^+\text{X}^-$  was reactive enough toward  $(\text{OEP})\text{AlMe}$  to give  $[(\text{OEP})\text{M}(\text{R})-\text{O}-(\text{OEP})\text{Al}]^+\text{X}^-$  in good yields in spite of the anticipated steric hindrance.



SCHEME 1

Although UV-vis spectrum of  $[(\text{OEP})\text{P}(\text{Et})-\text{O}-\text{Al}(\text{OEP})]^+\text{ClO}_4^-$  did not show much difference from that of the corresponding  $[(\text{OEP})\text{P}(\text{Et})(\text{OH})]^+\text{ClO}_4^-$ , the fluorescence spectra were totally different in these compounds. The red-shifted emission band and the very weak intensity in the dinuclear porphyrin strongly indicated the intramolecular exciplex formation between the two porphyrin rings.

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**FIGURE 1** Fluorescence spectra in  $\text{CH}_2\text{Cl}_2$  (ex 532 nm).

## REFERENCE

- [1] G. Yamamoto, R. Nadano, W. Satoh, Y. Yamamoto, and K.-y. Akiba, *Chem. Commun.*, 1325 (1997).