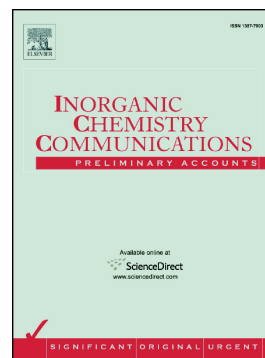


Accepted Manuscript

Synthesis, spectroscopy and singlet oxygen quantum yield of a non-aggregating hexadecamethyl-substituted phthalocyanine silicon(IV) derivative

Malcolm Alan Bartlett, Kerstin Mark, Jörg Sundermeyer



PII: S1387-7003(18)30474-X
DOI: doi:[10.1016/j.inoche.2018.07.032](https://doi.org/10.1016/j.inoche.2018.07.032)
Reference: INOCHE 7051
To appear in: *Inorganic Chemistry Communications*
Received date: 24 May 2018
Revised date: 13 July 2018
Accepted date: 24 July 2018

Please cite this article as: Malcolm Alan Bartlett, Kerstin Mark, Jörg Sundermeyer , Synthesis, spectroscopy and singlet oxygen quantum yield of a non-aggregating hexadecamethyl-substituted phthalocyanine silicon(IV) derivative. Inoche (2018), doi:[10.1016/j.inoche.2018.07.032](https://doi.org/10.1016/j.inoche.2018.07.032)

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Title

Synthesis, Spectroscopy and Singlet Oxygen Quantum Yield of a Non-Aggregating Hexadecamethyl-substituted Phthalocyanine Silicon(IV) Derivative

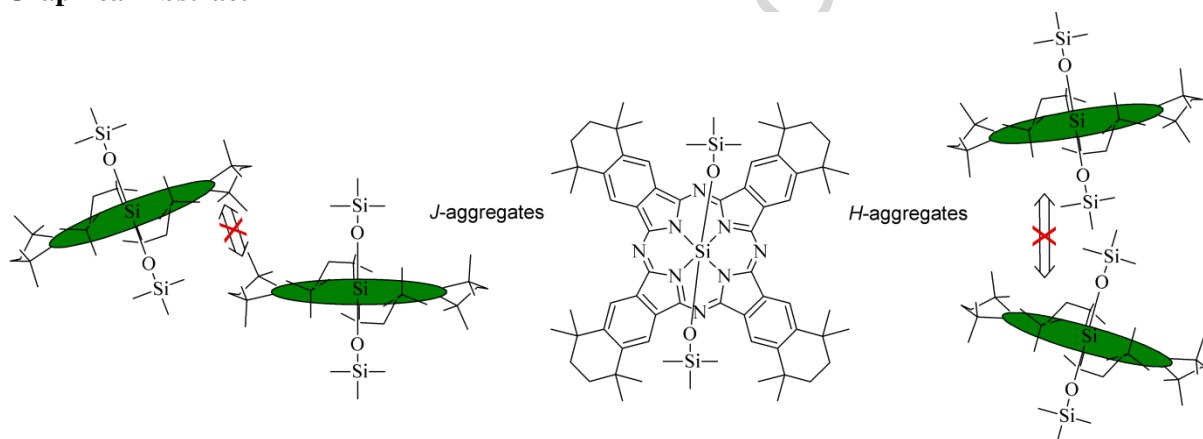
Authors

Malcolm Alan Bartlett¹, Kerstin Mark², Jörg Sundermeyer^{1*}

Affiliations

1 Department of Chemistry and Material Sciences Center,
Philipps-Universität Marburg, Hans-Meerwein-Straße 4, 35032 Marburg, Germany
*Corresponding author: E-mail: jsu@chemie.uni-marburg.de

2 Institut für Pharmazeutische Chemie und Zentrum für Tumor- und Immunbiologie (ZTI),
Philipps-Universität Marburg, Hans-Meerwein-Straße 3, 35043 Marburg, Germany

Graphical Abstract**Abstract**

A rigid hexadecamethyl substituted phthalocyanine (Pc*) silicon(IV) dichloride was synthesized by template cyclization of corresponding 1,3-diiminoisoindoline derivative with SiCl_4 . Attempts to prepare the same compound by insertion of HSiCl_3 into preformed H_2Pc^* in the presence of bases were unsuccessful. Exchange of the axial chloride ligands with trimethylsilyloxy groups made the molecular complex $\text{Pc}^*\text{Si}(\text{OTMS})_2$ very soluble and non-aggregating, as shown by UV-Vis experiments. The effect of such peripheral alkyl substitution on the singlet oxygen quantum yield of the $\text{Pc}^*\text{Si}(\text{OTMS})_2$ complex was determined and found to be 0.28; significantly lower than that for unsubstituted parent $\text{PcSi}(\text{OTMS})_2$. The merit of improving solubility over reduced singlet oxygen quantum yields is discussed.

Keywords: silicon, phthalocyanine, singlet oxygen, photosensitiser

Photodynamic therapy is a well established method for the treatment of cancer that reduces unwanted side-effects by using light, typically tissue-penetrating IR-laser light, to activate a photosensitiser (PS) in a specific region where activity is desired[1]. Therapeutic activity is achieved by the excitation of triplet oxygen present in the cell to singlet oxygen, which then oxidizes the surrounding biomolecules; the effectiveness of a compound to do this is measured as its singlet oxygen quantum yield, Φ_Δ . Whereas the first generation of compounds consisted mainly of porphyrins, such as photofrin,

Download English Version:

<https://daneshyari.com/en/article/11016038>

Download Persian Version:

<https://daneshyari.com/article/11016038>

[Daneshyari.com](https://daneshyari.com)