



Available online at [www.sciencedirect.com](http://www.sciencedirect.com)

SCIENCE @ DIRECT®

Chemical Physics Letters 395 (2004) 82–86

**CHEMICAL  
PHYSICS  
LETTERS**

[www.elsevier.com/locate/cplett](http://www.elsevier.com/locate/cplett)

## Aggregation and photophysical properties of water-soluble sapphyrins

P. Kubát <sup>a,\*</sup>, K. Lang <sup>b</sup>, Z. Zelinger <sup>a</sup>, V. Král <sup>c</sup>

<sup>a</sup> *J. Heyrovský Institute of Physical Chemistry, Academy of Sciences of the Czech Republic, Dolejškova 3, 18223 Praha 8, Czech Republic,*

<sup>b</sup> *Institute of Inorganic Chemistry, Academy of Sciences of the Czech Republic, 25068 Řež, Czech Republic*

<sup>c</sup> *Institute of Chemical Technology, Technická 5, 16628 Praha 6, Czech Republic*

Received 23 June 2004; in final form 15 July 2004

---

### Abstract

Aggregation and photophysical properties of three sapphyrins were studied by UV/Vis, emission, resonance light scattering and laser kinetic spectroscopies. The relative abundance of various types of aggregates depends mainly on the structure of sapphyrin, solvent and temperature. The formation of H-dimers is related to negative entropy and enthalpy changes and it is controlled mainly by electrostatic interactions between the positively charged sapphyrin unit and negative substituents. Excitation of the H-dimers leads to the formation of the triplet states of the sapphyrin monomers. The quantum yields of the singlet oxygen in methanol vary between 0.30–0.33 and are independent of substitution.

© 2004 Published by Elsevier B.V.

---