

Accepted Manuscript

Novel tetra 4-(hydroxymethyl)-2,6-dimethoxyphenoxy substituted metallophthalocyanines: Synthesis, electrochemical redox, electrocatalytic oxygen reducing, and volatile organic compounds sensing and adsorption properties

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PII: S0143-7208(18)30008-1

DOI: [10.1016/j.dyepig.2018.02.037](https://doi.org/10.1016/j.dyepig.2018.02.037)

Reference: DYPI 6570

To appear in: *Dyes and Pigments*

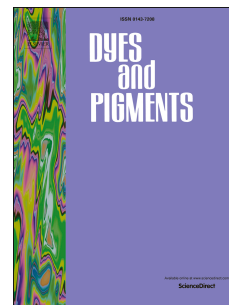
Received Date: 3 January 2018

Revised Date: 23 February 2018

Accepted Date: 23 February 2018

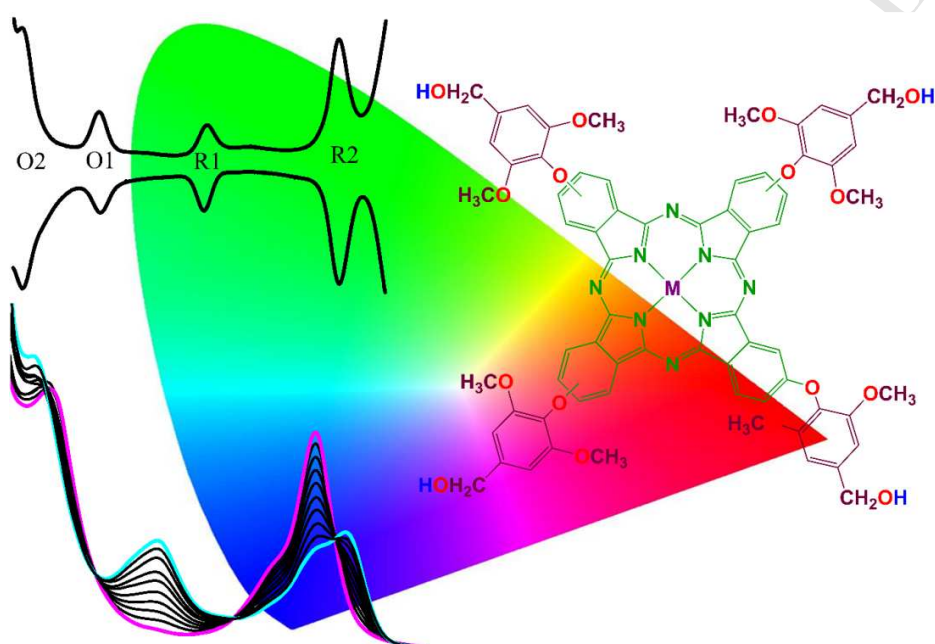
Please cite this article as: Günay İ, Orman EB, Altındal A, Salih B, Özer M, Özkaya AliRı, Novel tetra 4-(hydroxymethyl)-2,6-dimethoxyphenoxy substituted metallophthalocyanines: Synthesis, electrochemical redox, electrocatalytic oxygen reducing, and volatile organic compounds sensing and adsorption properties, *Dyes and Pigments* (2018), doi: 10.1016/j.dyepig.2018.02.037.

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Novel tetra 4-(hydroxymethyl)-2,6-dimethoxyphenoxy substituted metallophthalocyanines: synthesis, electrochemical redox, electrocatalytic oxygen reducing, and volatile organic compounds sensing and adsorption properties

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Tetrakis-benzyl alcohol substituted metallophthalocyanine complexes were prepared by the tetramerization reactions of (4-(hydroxymethyl)-2,6-dimethoxyphenoxy)phthalonitrile with Fe (II), Co (II) and Zn (II) metal salts in 2-*N*, *N*-dimethylaminoethanol. The structures of the complexes were characterized by elemental analysis, FTIR, UV-vis and MALDI-TOF MS spectroscopic methods. Redox properties of the compounds were investigated by voltammetric and in situ spectroelectrochemical measurements in nonaqueous solution medium. Furthermore, the electrocatalytic performances of the compounds for the oxygen reduction reaction were also studied. Beside, sensing measurements of the spin coated films of the complexes showed that their interaction with organic vapors lead to significant changes in the electrical conductivity. Maximum sensitivity was obtained with Fe(II) phthalocyanine coated sensor for all organic vapors investigated.

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