

Publication

Comparing a porphyrin- and a coumarin-based dye adsorbed on NiO(001)

JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)**ID** 4500728**Author(s)** Freund, Sara; Hinaut, Antoine; Marinakis, Nathalie; Constable, Edwin C.; Meyer, Ernst; Housecroft, Catherine E.; Glatzel, Thilo**Author(s) at UniBasel** [Housecroft, Catherine](#) ; [Freund, Sara](#) ; [Marinakis, Nathalie](#) ; [Constable, Edwin Charles](#) ; [Meyer, Ernst](#) ; [Glatzel, Thilo](#) ; [Hinaut, Antoine](#) ;**Year** 2019**Title** Comparing a porphyrin- and a coumarin-based dye adsorbed on NiO(001)**Journal** Beilstein Journal of Nanotechnology**Volume** 10**Pages / Article-Number** 874-881**Keywords** coumarin; Kelvin probe force microscopy; metal oxide; molecular resolution; nickel oxide (NiO); non-contact atomic force microscopy; porphyrin

Properties of metal oxides, such as optical absorption, can be influenced through the sensitization with molecular species that absorb visible light. Molecular/solid interfaces of this kind are particularly suited for the development and design of emerging hybrid technologies such as dye-sensitized solar cells. A key optimization parameter for such devices is the choice of the compounds in order to control the direction and the intensity of charge transfer across the interface. Here, the deposition of two different molecular dyes, porphyrin and coumarin, as single-layered islands on a NiO(001) single crystal surface have been studied by means of non-contact atomic force microscopy at room temperature. Comparison of both island types reveals different adsorption and packing of each dye, as well as an opposite charge-transfer direction, which has been quantified by Kelvin probe force microscopy measurements.

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