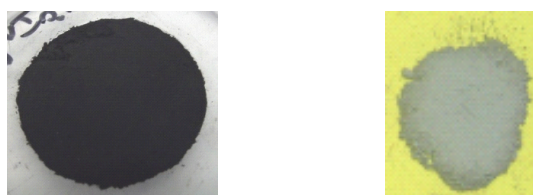


First dye-sensitized solar cell with p-type LaOCuS nanoparticles as photocathode

Adèle Renaud^a, Laurent Cario^a, Yann Pellegrin^b, Errol Blart^b, Mohammed Boujtita^b, Fabrice Odobel^b, Stéphane Jobic^a

5 Received (in XXX, XXX) Xth XXXXXXXXXX 200X, Accepted Xth XXXXXXXXXX 200X

DOI: 10.1039/b000000x

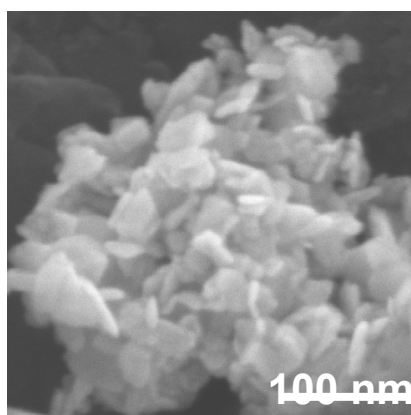


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Figure S1. Photographs of NiO (left) and LaOCuS (right) when prepared as nanoparticles after A. Renaud et al.¹ and C. Doussier-Brochard et al.², respectively.

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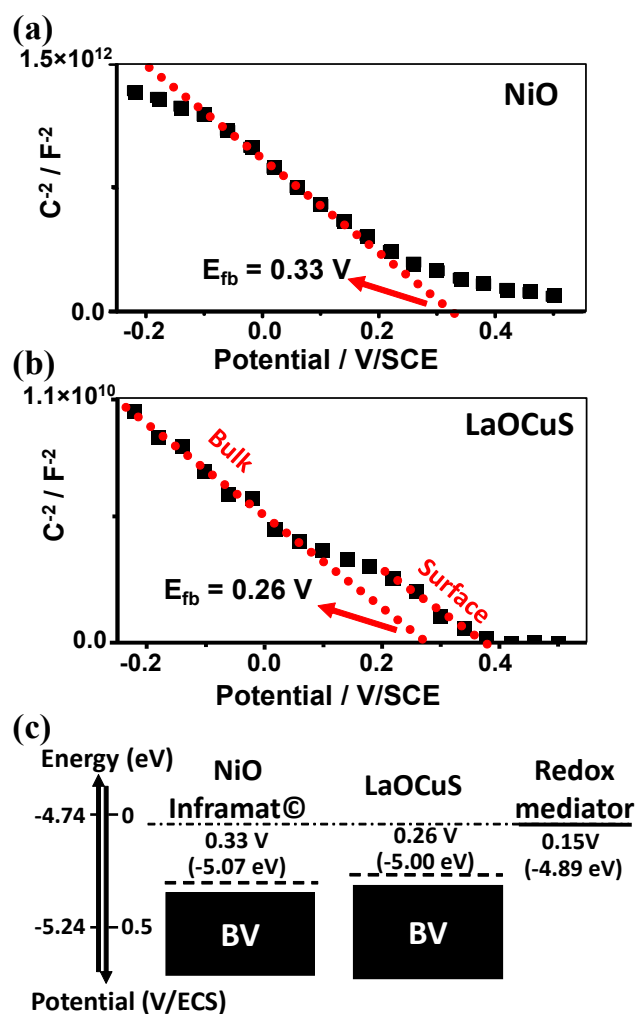
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Figure S2. SEM image of LaOCuS nanoparticles obtained on a JEOL7600F

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5 **Figure S3.** Mott-Schottly plots for Inframat® NiO (a) and LaOCuS (b) pellets sintered at 450°C in air and under N₂ atmosphere, respectively (electrolyte : LiClO₄ in water; pH= 6.3). Schematic representation of the evolution of the flat band potentials going from NiO to LaOCuS (c).

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15 **Table S1.** Photovoltaic performances of a DSSC device constructed with Inframat®NiO as p-SC sensitized with dye PMI-NDI and using the cobalt electrolyte.

NiO				
Dye/ Redox. mediator	V_{oc} (mV)	J_{sc} (mA.cm ⁻²)	FF (%)	η (%)
PMI-NDI/Co	285	1.2	41	0.141

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References:

1. A. Renaud, B. Chavillon, L. Cario, L. Le Pleux, N. Szuwarski, Y. Pellegrin, E. Blart, E. Gautron, F. Odobel, S. Jobic, Origin of the black color of NiO used as photocathode in p-type dye sensitized solar cells, *J. Phys. Chem. C*, 2013, 117, 22478-22483
- 5 2. C. Doussier-Brochard, B. Chavillon, L. Cario, S. Jobic, Synthesis of p-type transparent LaOCuS nanoparticles via soft chemistry, *Inorg. Chem.*, 2010, 49, 3074-3076

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