

Supporting information

# Hydrogel Electrolytes Based on Xanthan Gum: Green Route towards Stable Dye-Sensitized Solar Cells

Simone Galliano, Federico Bella, Matteo Bonomo, Guido Viscardi, Claudio Gerbaldi, Gerrit Boschloo\* and Claudia Barolo\*

\* Correspondence: [claudia.barolo@unito.it](mailto:claudia.barolo@unito.it) (C.B.); [gerrit.boschloo@kemi.uu.se](mailto:gerrit.boschloo@kemi.uu.se) (G.B.)

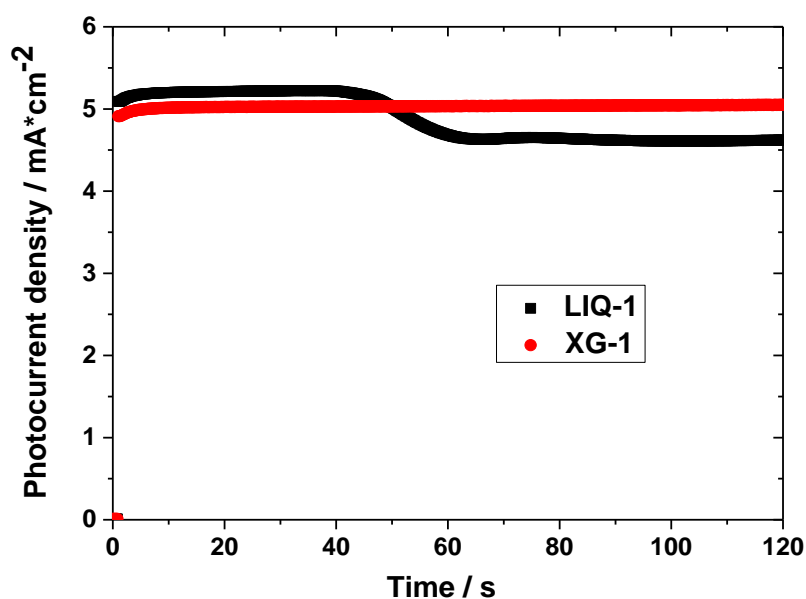


Figure S1. Short-circuit photocurrent density of liquid- and hydrogel-based cells measured under 1 sun irradiation.

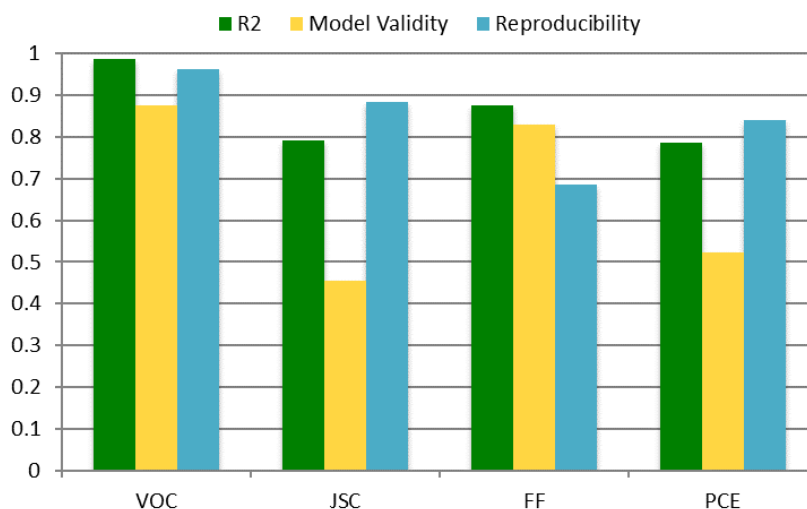


Figure S2. Summary of fit for each response showing R<sup>2</sup> value, model validity and reproducibility.

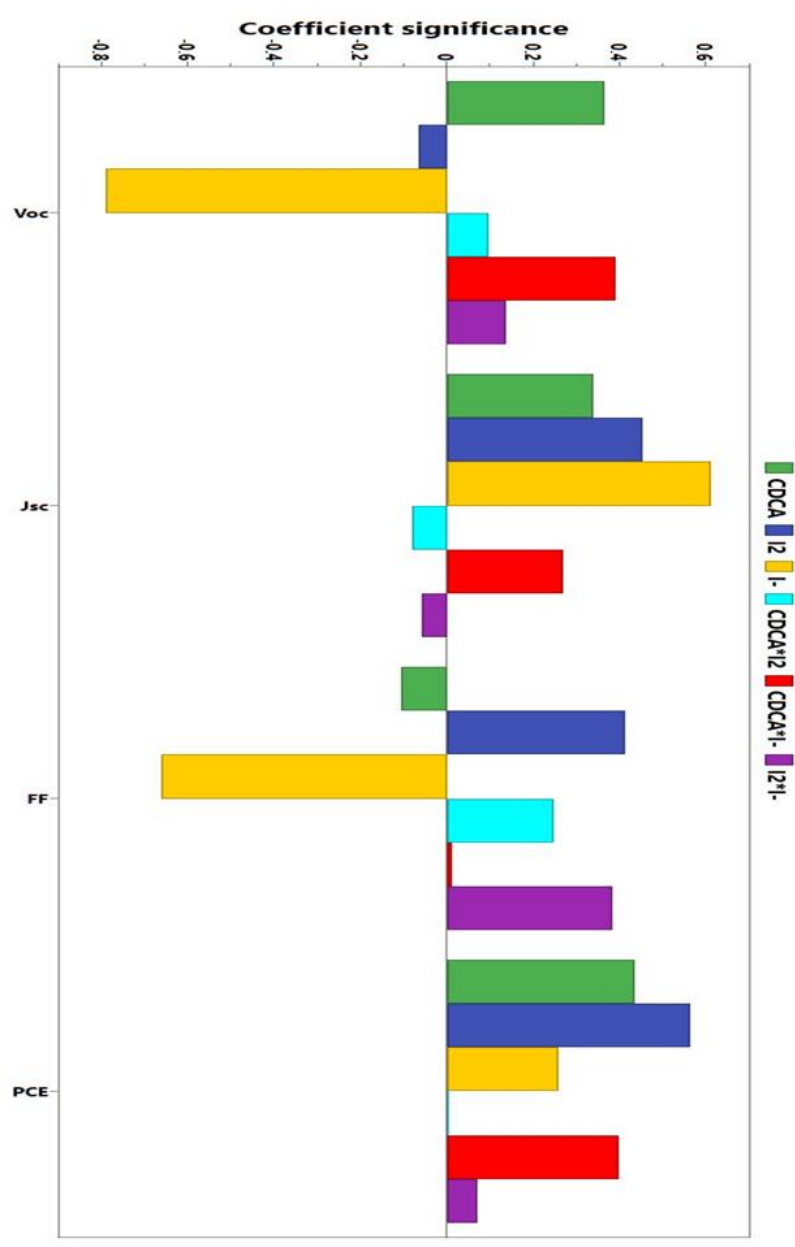
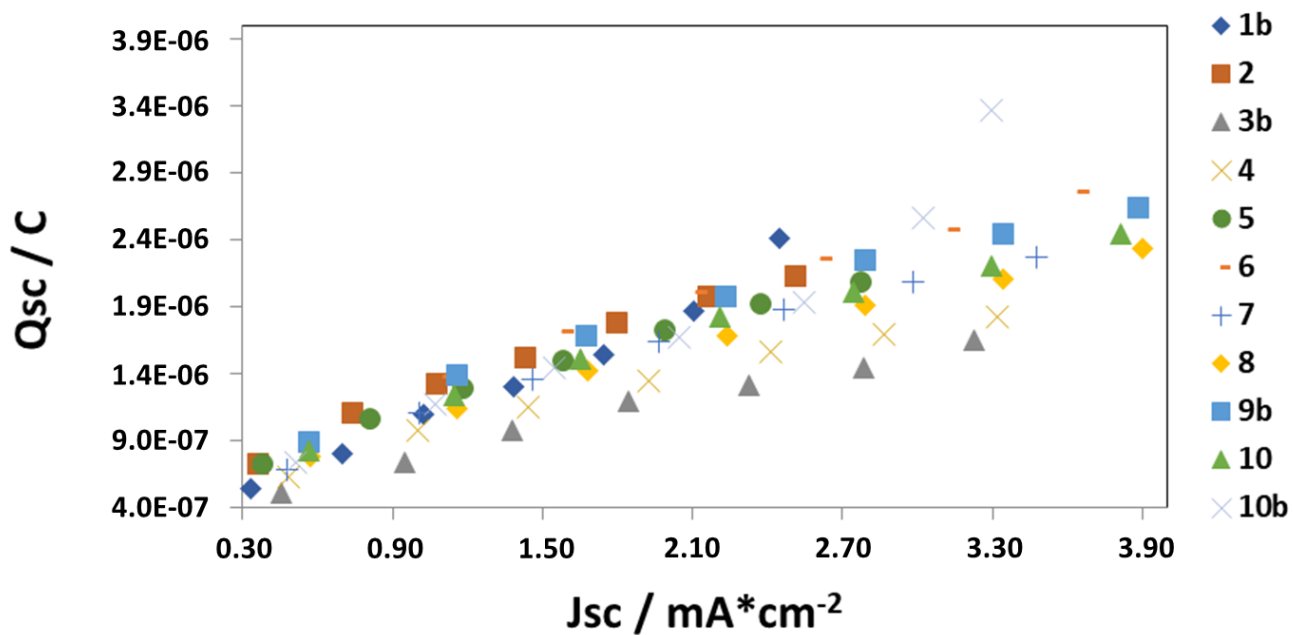
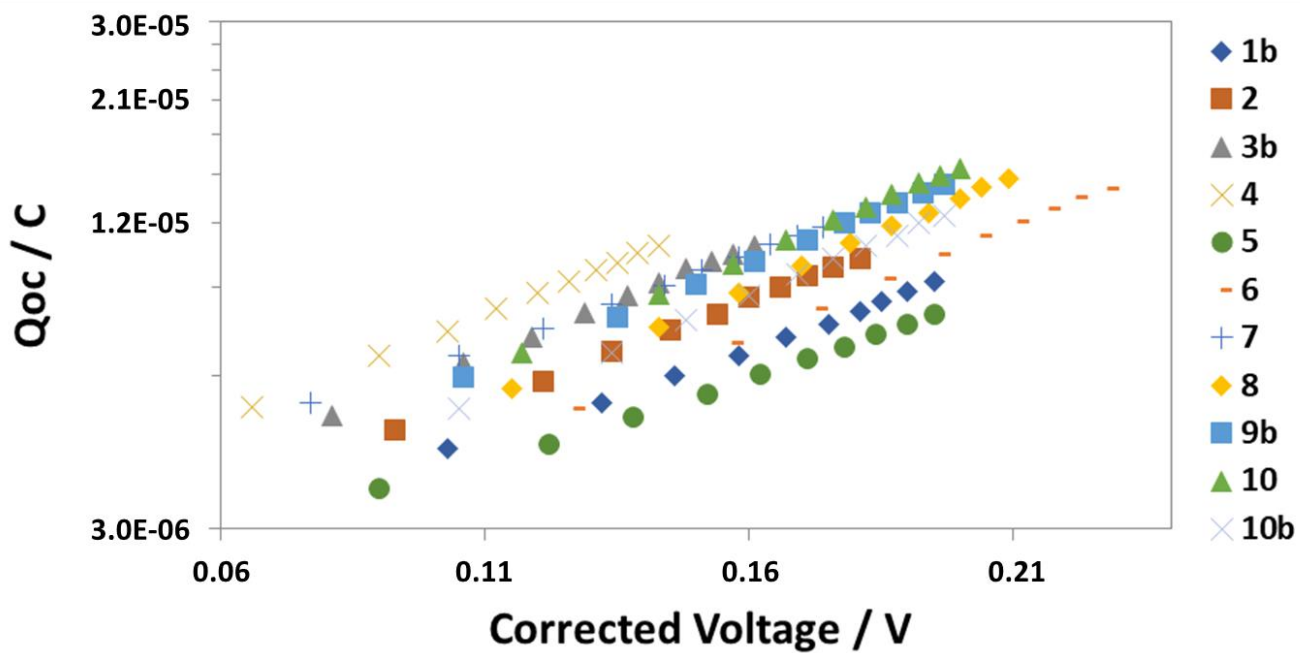
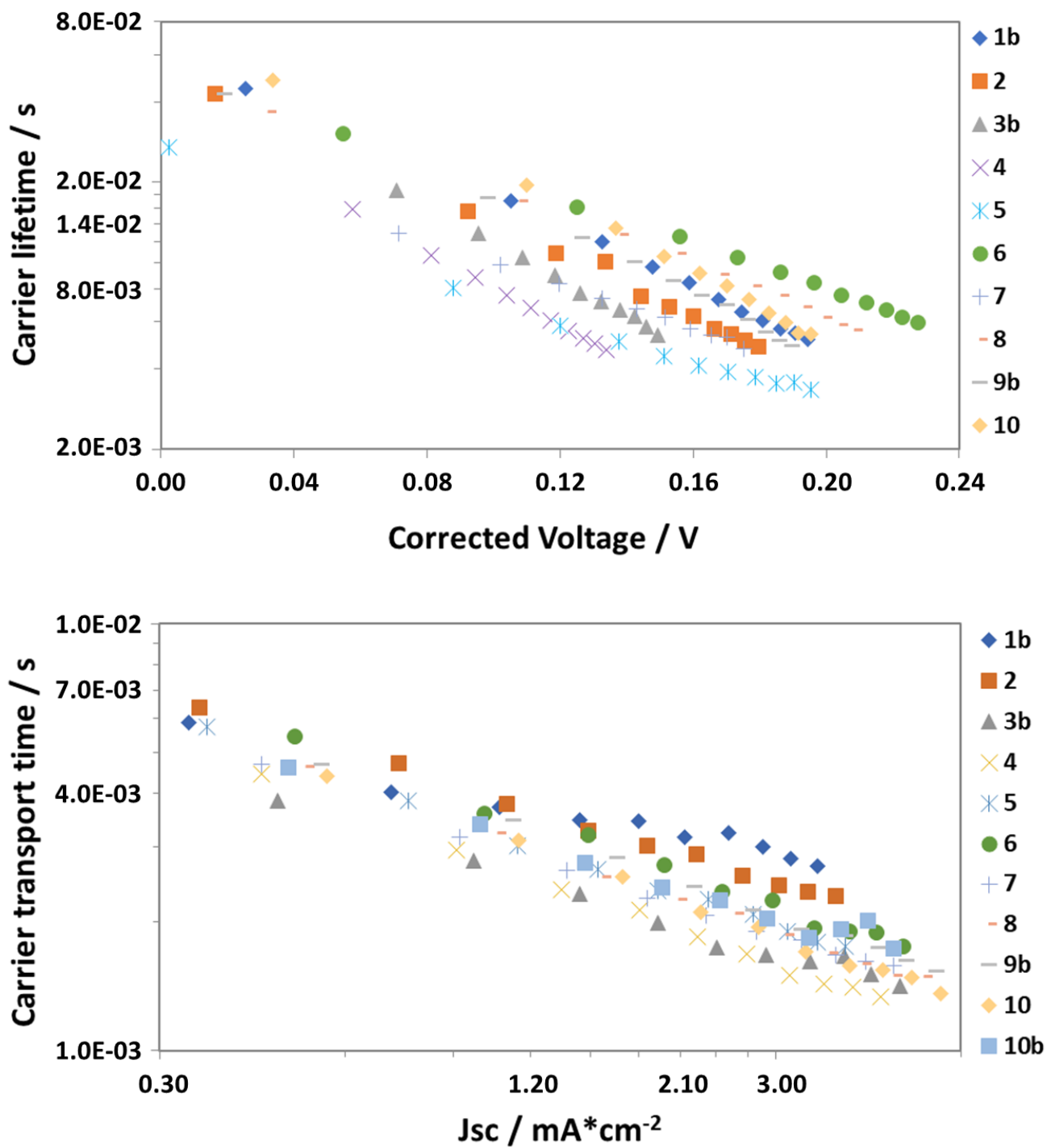


Figure S3. Coefficient significance of model terms on selected photovoltaic responses ( $J_{sc}$ ,  $V_{oc}$ , FF, PCE).



**Figure S4.** Extracted charges for DoE cells as a function of  $V_{oc}$  (up) and  $J_{sc}$  (down) under different light intensities.  $V_{oc}$  was corrected considering the shift of  $E_{f,redox}$  due to the different redox concentrations.



**Figure S5.** Electron lifetime (up) and transport time (down) as a function of light intensity.  $V_{oc}$  was corrected considering the shift of  $E_{f,redox}$  due to the different redox concentrations.