



ORGANIC SOLAR CELLS FROM BIOSOURCED MATERIALS

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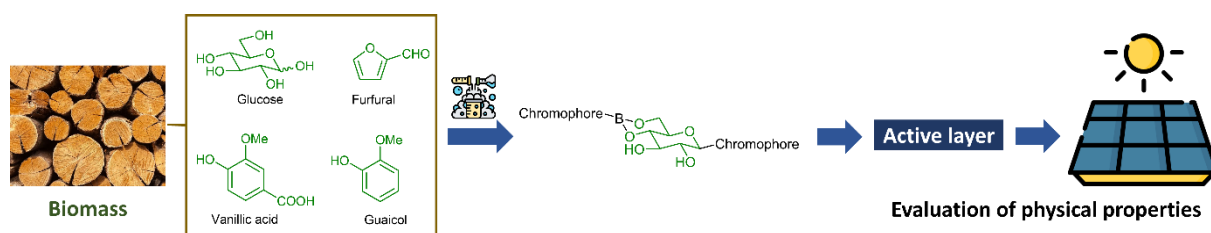
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Fossil energy is still widely used in our daily life. However, the exhaustion and negative environmental impacts of this energy have been reported. Along with the increasing demand for energy, finding and transitioning to alternative energy sources is necessary. Photovoltaic that converts the sunlight to electricity is one of the ways to make this transition possible.

Silicon-based solar cells are already well developed, but cannot be installed everywhere. The process is energy intensive for producing pure silicon and requires a large amount of silicon per panel. CIGS or CIS are the most efficient materials but are made from rare metals and could be toxic in case of leakage. Complementary technology to silicon-based ones, organic solar cells (OSCs) are promising since fewer materials are needed and they can be printed on flexible surfaces.^{1,2} Nevertheless, the compounds used in manufacturing these materials are derived from petrochemicals and most of them are not biodegradable. The ideal for OSC would be to incorporate biosourced compounds that can degrade naturally at the end of the panel's life cycle.

The aim of our project is to prepare new electron-donor materials for organic electronics that will be as bio-based as possible. They should be low cost and should be synthesized with minimal waste. We focus on using compounds from biomass such as furfural, and lignin-derived aromatic compounds...³

In this work, some conjugated systems based on furan and guaiacol have been prepared and their grafting on glucose has been studied. These syntheses, their grafting on glucose and the physical properties will be presented.



References

¹ A. M. Bagher, *International Journal of Renewable and Sustainable Energy*, **2014**, 3, 53

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