



## Simple and Versatile Molecular Donors for Organic Photovoltaics Prepared by Metal-Free Synthesis

Submitted by Jean Roncali on Tue, 04/14/2015 - 17:16

Titre	Simple and Versatile Molecular Donors for Organic Photovoltaics Prepared by Metal-Free Synthesis
Type de publication	Article de revue
Auteur	Diac, Andreea [1], Demeter, Dora [2], Allain, Magali [3], Grosu, Ion [4], Roncali, Jean [5]
Editeur	Wiley-VCH Verlag
Type	Article scientifique dans une revue à comité de lecture
Année	2015
Langue	Anglais
Date	Jul-01-2016
Numéro	4
Pagination	1598-1608
Volume	21
Titre de la revue	Chemistry - A European Journal
ISSN	0947-6539
Mots-clés	Basic condensation [6], Clean chemistry [7], Donor-acceptor systems [8], Organic solar cells [9], photochemistry [10]
Résumé en anglais	<p>Donor-acceptor molecules (D-<math>\pi</math>-A) built by connecting a diphenylhydrazone block to a dicyanovinyl acceptor group via various thiophene-based <math>\pi</math>-conjugating spacers (1-5) were synthesized from mono- or dialdehydes by a simple metal-free procedure. Cyclic voltammetry and UV/Vis absorption spectroscopy show that the extension and/or increase of the donor strength of the spacer produces a decrease of the HOMO and LUMO energy level, a red shift of the absorption spectrum and an increase of the molecular absorption coefficient. Compared to solutions, the optical spectra of spin-cast thin films of compounds 1-3 show a broadening and red shift of the absorption bands, consistent with the formation of J-aggregates. In contrast the blue shift observed for the EDOT-containing compounds 4 and 5 suggests the presence of H-aggregates. Solution-cast and vacuum-deposited films of donors 1-5 were evaluated in solar cells with fullerene C60 as acceptor. A power-conversion efficiency among the highest reported for bilayer devices of basic configuration was obtained with compound 2. On the other hand, the results obtained with 4 and 5 suggest that the presence of EDOT in the structure can have deleterious effects on the organization and performances of the donor material.</p>
URL de la notice	<a href="http://okina.univ-angers.fr/publications/ua9650">http://okina.univ-angers.fr/publications/ua9650</a> [11]
DOI	10.1002/chem.201405425 [12]
Titre abrégé	Chem. Eur. J.

## Liens

- [1] [http://okina.univ-angers.fr/publications?f\[author\]=9187](http://okina.univ-angers.fr/publications?f[author]=9187)
- [2] [http://okina.univ-angers.fr/publications?f\[author\]=2687](http://okina.univ-angers.fr/publications?f[author]=2687)
- [3] <http://okina.univ-angers.fr/magali.allain/publications>
- [4] [http://okina.univ-angers.fr/publications?f\[author\]=2688](http://okina.univ-angers.fr/publications?f[author]=2688)
- [5] <http://okina.univ-angers.fr/jean.roncali/publications>
- [6] [http://okina.univ-angers.fr/publications?f\[keyword\]=5177](http://okina.univ-angers.fr/publications?f[keyword]=5177)
- [7] [http://okina.univ-angers.fr/publications?f\[keyword\]=4887](http://okina.univ-angers.fr/publications?f[keyword]=4887)
- [8] [http://okina.univ-angers.fr/publications?f\[keyword\]=4976](http://okina.univ-angers.fr/publications?f[keyword]=4976)
- [9] [http://okina.univ-angers.fr/publications?f\[keyword\]=4891](http://okina.univ-angers.fr/publications?f[keyword]=4891)
- [10] [http://okina.univ-angers.fr/publications?f\[keyword\]=5332](http://okina.univ-angers.fr/publications?f[keyword]=5332)
- [11] <http://okina.univ-angers.fr/publications/ua9650>
- [12] <http://dx.doi.org/10.1002/chem.201405425>

Publié sur *Okina* (<http://okina.univ-angers.fr>)