



Chemistry Department Special e-Seminar

Friday, 19.11.2021 at 15:40 using WebEx

Meeting number: 2674 733 4644

Password: Chem601

<https://metu.webex.com/metu/j.php?MTID=mf9394cdfae96b8942d936bbc5865805>

Investigation on Donor, Acceptor and Substituent Effect on Phthalimide and Thieno[3,4-c]pyrrole-4,6-dione Based Donor-Acceptor-Donor Type Monomers and Polymers



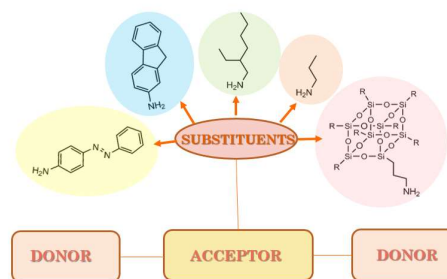
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Abstract: Conjugated organic materials comprise a major field of material chemistry focused on the improvement of new building blocks for the synthesis of novel semiconducting materials with advanced functional properties. Such semiconducting systems have the advantage of low cost, solution processability and flexibility and find many applications in the field of plastic photovoltaics, electrochromics and display technologies [1]. The electronic and optical features of these semiconducting organic materials can be tailored via molecular engineering. One of the most effective strategy for engineering at molecular level is utilizing donor-acceptor approach. This approach uses electron rich and electron deficient units to provide highly conductive and low band gap materials [2]. Thiophene and its alkylenedioxythiophene derivatives are popular electron rich building blocks to construct donor units for conjugated semiconducting materials [3]. Phthalimide and thieno[3,4-c]pyrrole-4,6-dione compounds comprise two different classes of acceptor units having electron-withdrawing carbonyl groups and a bridging nitrogen center for modification of the acceptors with different substituents [4]. The pairing of these thiophene based donors with the modified phthalimide and thieno[3,4-c]pyrrole-4,6-dione acceptor units in donor-acceptor-donor configuration generates a series of conjugated monomers and polymers with a reduced energy gap. The effect of substituent, donor and acceptor on optoelectronic properties of these monomers and polymers will be presented in this e-seminar.



- [1] S.C. Rasmussen, S.J. Evenson and C.B. McCausland, *Chem. Commun.* **2015**, 51, 4528.
[2] J. Roncali, *Macromol. Rapid Commun.* **2007**, 28 1761.
[3] J. Roncali, *Chem. Rev.* **1992**, 92, 711.
[4] Z.G. Zhang, J. Wang, *J. Mater. Chem.* **2012**, 22, 4178.