

## Synthesis and Characterization of Alkylated Pentacenes as OTFT Materials

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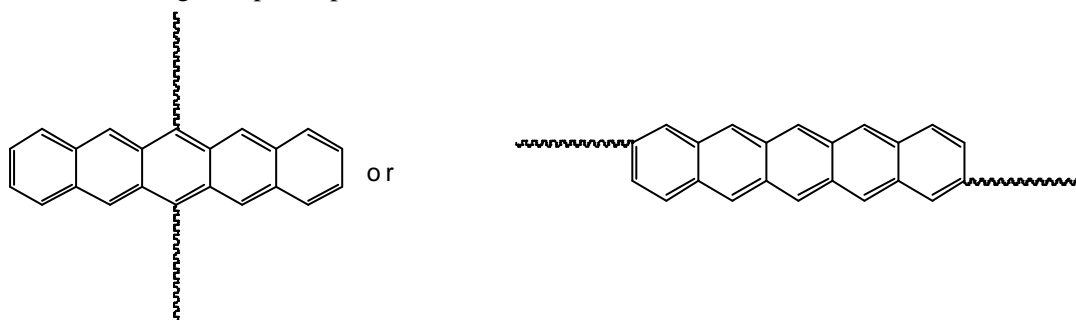
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During the last few years, the development of organic thin film transistors (OTFTs) has attracted much attention. Organic materials have the key advantage of potentially simple and low temperature thin film processing, using techniques such as spin coating, stamping or ink-jet printing methods. It was known that the  $\pi$ -conjugated and fused benzene ring systems are the most promising n-type materials for the OTFT application. Other research groups, reported that as it is purified according to optimized procedures, thin film field-effect transistors using pentacene as the active semi-conductor have shown charge transport mobility in the range of  $0.005\text{--}2.1\text{ cm}^2\text{V}^{-1}\text{s}^{-1}$  and on/off current ratios larger than  $10^8$ . However, pentacene practical used in OTFTs gives rise to problems mainly due to its sensitivity to oxygen and its very low solubility. In this study, new pentacene derivatives with alkyl groups have been designed, synthesized and characterized.

Keyword: pentacene, OTFT

To be presented in the Electroluminescent Displays

I would like to give a poster presentation at the conference



### References

- (1) N. Vets, M. Smet, W. Dehaen, *Tetrahedron Lett.* 45 (2004) 7287.
- (2) J. Puigdollers, C. Voz, A. Orpella, R. Quidant, I. Martin, *Org. Electronics* 5 (2004) 67.
- (3) A. Afzali, C. D. Dimitrakopoulos, T. L. Breen, *J. Am. Chem. Soc.* 124 (2002) 8812.