

## Trannulated Fluorofullerenes: A New Family of Donor-Acceptor Materials

Glenn A. Burley,<sup>a</sup> Anthony G. Avent,<sup>a</sup> Olga V. Boltalina,<sup>b</sup> Federico Pascuale,<sup>a</sup> Joan M. Street<sup>c</sup> and Roger Taylor<sup>a</sup>

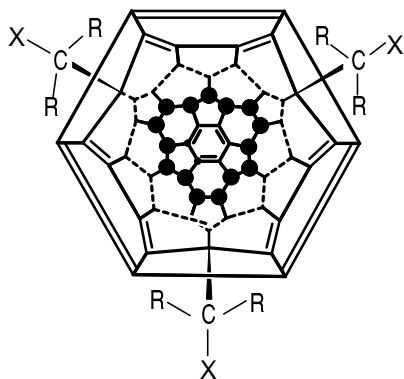
<sup>a</sup> School of Chemistry, Physics & Environmental Sciences. Sussex University, Brighton BN1 9QJ UK

<sup>b</sup> Department of Chemistry. Moscow State University. Moscow 119899 Russia

<sup>c</sup> Department of Chemistry. Southampton University, Southampton SO17 1BJ UK

In the continuing quest for efficient and long-lived electron transfer processes, [60]fullerene derivatives have shown to be candidates worthy of study.<sup>1</sup> One problem associated with the use of fullerenes as electron acceptor units is its reduced electron affinity upon most types of derivatisation. Fluorination of the fullerene core however *enhances* its electron affinity, therefore overcomes the inadequacy of its all-carbon parent.

Recently, the discovery of the first [18]trannulated fluorofullerene using Bingel addition chemistry to  $C_{60}F_{18}$  was reported by our laboratory (Figure).<sup>2</sup> This reaction provides an efficient synthetic route for the formation of novel photoactive systems containing multiple (from four up to seven) chromophores. This presentation will describe the utilisation of  $C_{60}F_{18}$  as a useful synthon for the formation of a new generation of donor-acceptor devices.



**Figure:** Schlegel diagram of the structure of the [18]trannulene derived from  $C_{60}F_{18}$  ( $R = CO_2Et$ ,  $X =$  donor,  $\bullet = F$ ); the annulene chain is shown as a dotted line.

### References

1. H. Imahori, D. Guldi, K. Tamaki, Y. Yoshida, C. Luo, Y. Sakata, S. Fukuzumi, *J. Am. Chem. Soc.*, **2001**, *123*, 6617-6628.
2. X.-W. Wei, A.D. Darwish, O. Boltalina, P.B. Hitchcock, J.M. Street, R. Taylor, *Angew. Chem. Int. Ed.*, **2001**, *40*, 2989-2992.