MIXED BIS- FUNCTIONALIZATION OF FULLERENE C_{60} FROM C_{60}^{2-} ANION : PRELIMINARY RESULTS.

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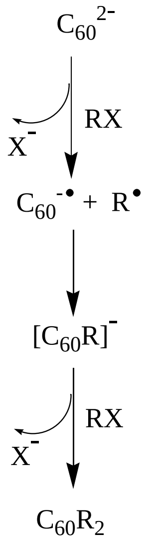
It is now well-established that C_{60}^{2-} anion is an efficient reagent for preparing new adducts $C_{60}R_2$ or cycloadducts $C_{60}(CH_2)_2R'$ from reaction with halo derivatives, respectively RX or XCH_2-R'-CH_2X (X = I or Br),[1] thus allowing to obtain novel highly functionalized C_{60} compounds.[2] It has been clearly shown that these reactions proceed through a three-step process : a single electron transfer, a radical coupling and a nucleophilic substitution (Scheme 1).[3]

On the other hand, formation of $C_{60}RR''$ adducts bearing two different alkyl groups R and R'' has also been reported to occur from C_{60}^{2-} anions, if tBuI is used in the first step (R = tBu). These results have been accounted for from the steric effect of the tBu group.[3]

We have now found that it is possible to synthesize various $C_{60}RR''$ adducts thanks to the control of kinetics of the two first steps of the above mentioned mechanism with regard to the third one (Scheme 1). In this case, $C_{60}R^-$ anion can be formed selectively and independently on the nature of the R group. This approach opens up the way to new dihydrofullerenes $C_{60}RH$ as well as to mixed bis-functionalized $C_{60}RR''$ derivatives, as some of our recent results will show.



Scheme 1

References

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