

# Photoinduced intramolecular multielectron transfer in starburst hexadecaaniline derivative of C60

Taizoon Canteenwala,<sup>1</sup> Sambhaji Patil,<sup>1</sup>  
Prashant Padmawar,<sup>1</sup> Manas Halder<sup>1</sup> and  
Long Chiang<sup>1</sup>

<sup>1</sup>Center for Condensed Matter Sciences  
National Taiwan University  
1 Roosevelt Road, Section 4  
Taipei, TW 10674  
Taiwan

Efficient synthesis of starburst oligoanilines was demonstrated using hexamalonate and pentamalonate [60]fullerene adducts as precursor molecules where C60 serves as a molecular core. Electron-donating properties of oligoanilines were enhanced by phenylhydrazine reduction leading to the corresponding leucoemeraldine derivatives. Intramolecular electron-transfer from hexadecaaniline arms of these starburst molecules to the C60 core was found to be highly efficient upon irradiation. Under in situ chemical trapping of fullerenic anions in the solution of leucoemeraldine deca(hexadecaanilinated)fullerene malonate derivative, multiple electrons consecutively transferred from several oligoaniline arms to the fullerene cage were detected. By utilization of leucoemeraldine di(hexadecaanilinated) monomalonate adduct of C60 in the photoactivation study, an effective intramolecular electron hopping distance can be correlated by counting the number of electrons involved in the photoinduced transfer process.