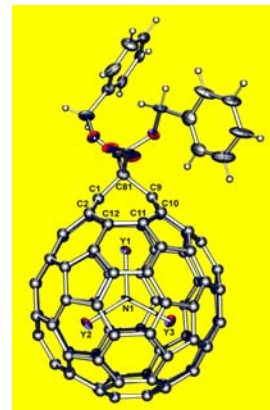
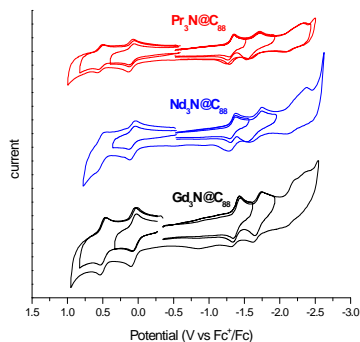


Playing with Buckyball Maracas: Interplay between the Inside and Outside Properties of Endohedral Fullerenes

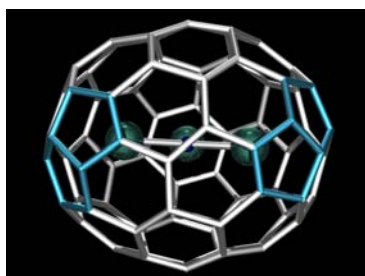
Luis Echegoyen

University of Texas, El Paso, Department of Chemistry, El Paso, TX

Since the serendipitous discovery of Buckminsterfullerenes in 1985 by Smalley, Kroto and Curl, the field of new carbon nanostructures has quickly evolved into a major technological effort. After the buckyball discovery came the Carbon Nanotubes (CNTs) in the early '90s, followed by the Carbon Nanoions (CNOs) and multiple other carbon allotropes, such as the nanohorns and the nanostars. Many of these compounds and materials have found unique and useful applications due to their specialized properties, such as unusual strengths and electronic transporting abilities. A particularly interesting subset of carbon-based compounds was also serendipitously discovered by Dorn and coworkers in 1999, the trimetallic nitride endohedrals (TMNs), which contain a trimetallic nitride group (M_3N) inside a carbon cage (C_{2n}), denoted as $M_3N@C_{2n}$. Multiple metals have been incorporated, including Gd, which has potential diagnostic applications. In addition to metallic nitrides, carbides, oxides, and more recently, sulfides ($M_2S@C_{2n}$) have been discovered and isolated.



Our group has steadily contributed to the fullerene field, from the electrochemical properties of empty fullerenes to the synthesis of novel endohedral fullerenes and their exohedrally functionalized derivatives. We have discovered unusual structures and unique properties of potential application in photovoltaics and other fields. We will describe the overall field of endohedral fullerenes and report recent results, especially those concerning photovoltaic applications.



of empty fullerenes to the synthesis of novel endohedral fullerenes and their exohedrally functionalized derivatives. We have discovered unusual structures and unique properties of potential application in photovoltaics and other fields. We will describe the overall field of endohedral fullerenes and report recent results, especially those concerning photovoltaic applications.

