



# 中国科学院化学研究所 分子纳米结构与纳米技术重点实验室 学 术 报 告

报告题目: **The Structures of Some Interesting Fullerenes**

报 告 人: Alan L. Balch

Distinguished Professor

Department of Chemistry, UC Davis

时间地点: **2013年11月11日 (星期一) 上午8:30**  
**中科院化学所5号楼502会议室**



B.A., Cornell University, 1962.

Phi Beta Kappa

Leeds and Northrop Predoctoral Fellow, 1962-63.

NSF Predoctoral Fellow, 1963-66.

M.A.; Ph.D., Harvard University, 1965; 1967.

Appointed to faculty, UC Los Angeles, 1966-1970.

Appointed to faculty, UC Davis, 1970-,

NSF Award for Special Creativity, 1989.

Reiley Lecturer. Notre Dame University

Editorial Advisory Board: Inorganic Chemistry, 1989-1991.

Metallobiochemistry Study Section NIH, 1990-94; Chair, 1992-94.

Editorial Advisory Board: Journal of Cluster Science; (1999-2006).

International Advisory Editorial Board: Journal of the Chemical Society, Dalton Transactions

Advisory Editorial Board: Inorganic Chemistry Communications (2004-present). Associate Editor, Inorganic Chemistry, (2006- ).

**PRINCIPAL RESEARCH INTERESTS:** Endohedral Fullerenes And Empty Cage Fullerenes. The ability to place several lanthanide metal ions with their attendant magnetic and luminescent properties inside a relatively inert cage of 80 or so carbon atoms provides a new set of molecules for development as magnetic resonance imaging (MRI) contrast agents, as novel lumophores, and as hosts for radioactive nuclei. We are leaders the study of fullerene structure and reactivity. Recent work has demonstrated that the metal ions inside endohedral fullerenes influence the reactivity of the outside of the carbon cage. Moreover external supramolecular organization of endohedral fullerenes influences the positioning of the metal ions inside the cages. We have also demonstrated that the isolated pentagon rule (IPR), a basic tenant of empty cage fullerene structure, is frequently violated in endohedral fullerenes. For example Tb<sub>3</sub>N@Cs(51365)-C<sub>84</sub> (Cs is the point group symmetry of the cage alone and 51365 designates which of the 51568 non-IPR cages this endohedral fullerene uses) has a peculiar egg-shaped structure due to the presence of two adjacent pentagons.

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