

## Lanthanum Endohedral Metallofulleropyrrolidine : Synthesis, Isolation and characterization

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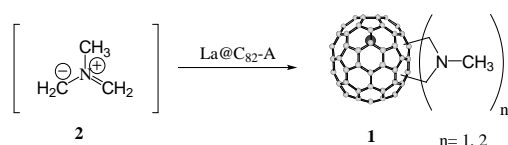
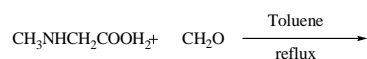
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Endohedral metallofullerenes; molecules with a positively charged metal core surrounded by a negatively charged carbon cage, present unique structure and novel properties together with considerable potential application perspectives which arise from the incarcerated metal and are not expected for the empty fullerenes.<sup>[1]</sup>

Driven by their novel structures and properties, limited cases of organic functionalization of metallofullerenes have been reported. Relative to metallofullerenes, organic derivatization of C<sub>60</sub> has been extensively investigated. Among the successful functionalization methodologies, the 1,3-dipolar cycloaddition of azomethine ylides to C<sub>60</sub> has been broadly accepted and referred to as the Prato reaction.<sup>[2]</sup> The fulleropyrrolidines thus formed present novel properties that are absent for their pristine C<sub>60</sub>.

We report for the first time synthesis of lanthanum endohedral metallofulleropyrrolidines (**1**) through addition of an azomethine ylide (**2**) to La@C<sub>82</sub>-A.<sup>[3]</sup> Metallofulleropyrrolidines (**1**) have been isolated by HPLC chromatography and characterized by means of mass spectrometry, UV/Vis-NIR absorption, and ESR spectroscopy. Formation of N-substituted fulleropyrrolidine will also be presented.



- [1] T. Akasaka, S. Nagase, *Endohedralfullerenes: A New Family of Carbon Clusters*, Dordrecht, **2002**, p. 231.  
[2] M. Prato, M. Maggini, *Acc. Chem. Res.* **1998**, 31, 519.  
[3] B. Cao, T. Wakahara, Y. Maeda, A. Han, T. Akasaka, T. Kato, K. Kobayashi, S. Nagase, *Chem. Eur. J.* **2004**, 10, 716-720.