

Chemical Functionalization of Dimetallofullerenes

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Endohedral metallofullerenes have attracted significant interest in novel properties according to their special molecular structures.¹ In 1997, we reported the structural determination and the first experimental evidence for three dimensional random motion of two La atoms in La₂@C₈₀ based on ¹³C and ¹³⁹La NMR spectral analyses.² Very recently, we have found that this three dimensional random motion of La atoms in La₂@C₈₀ can be restricted to the circular motion in a plane in a silylated La₂@C₈₀ by means of theoretical calculations.³ Meanwhile, in the case of Ce₂@C₈₀ that has the same carbon cage structure with La₂@C₈₀, we expect to obtain information of the motion of Ce atoms inside the cage by analyzing of paramagnetic shifts in the NMR spectrum. In this paper, we report the bis-silylation of La₂@C₈₀ and Ce₂@C₈₀. We will also present the first experimental evidence of the control of the motion of two metal atoms inside the cage.

References:

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