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## Endohedral derivatives of fullerenes and their formation

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Methods of synthesis of endohedral derivatives of fullerene  $C_{60}$  was discussed. Particular attention is spare to the works in which mechanism of windows was used. Several examples functionalization of fullerene  $C_{60}$  were considered and shown as can diminish activation energy for penetrate atom He in carbon cage (or for outlet atom He from cage). Energies of the transition states for some such reactions were calculated. Results obtained can be used at plan ot synthesis of new endohedral derivatives of fullerene  $C_{60}$ . and other polyhedral carbon clusters.