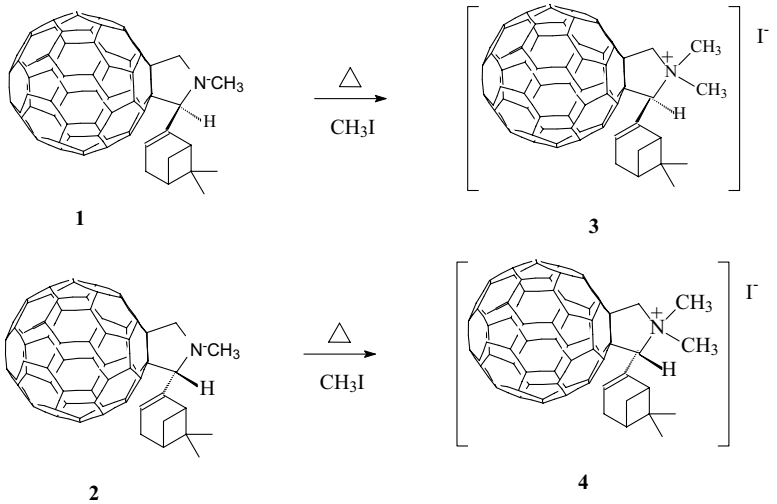
Optically active diastereomeric N-methyl-2(-)myrtenylpyrrolidinofullerenes and their methiodides: synthesis and CD spectra

Abramova N.V.*, Babievski K.K., Peregudova S.M., Manuylov S.A., Sokolov V.I.*

Institute of Organoelement Compounds, Russian Academy of Sciences, Moscow, Russia
**e-mail: sokol@ineos.ac.ru*

In the continuation of our study[1,2] of the synthesis and chiroptical properties of the fullerene derivatives, we turned to N-methyl-2 (-)myrtenyl[60]fullereno[c]pyrrolidine prepared by the Prato reaction starting with the natural enantiomerically pure aldehyde (-)myrtenal of the terpenoid family. In the course of reaction, a new chiral centre C-2 appears and, correspondingly, two diastereomers are formed. They were separated using the repeated column chromatography on SiO_2 and obtained as pure individual compounds **1,** R_f=0.68, and **2,** R_f=0.47, in the ratio **1:2** = 2:9. The treatment with CH_3I afforded the methiodides **3** and **4** respectively (Fig. 1). For all compounds cyclic voltammograms were obtained. The circular dichroism spectra were registered and Cotton effects were analyzed in terms of the sector rules[3]. More analogous derivatives of C_{70} (owing to its lower symmetry), namely, isomeric N-methyl-2(-)myrtenyl[70]fullereno[c]pyrrolidines have been synthesized, isolated and similar electrochemical and chiroptical investigations have been performed.



1 **3**

2 **4**

The work has been supported by Russian Foundation for Basic Research (08-03-00169 and 11-03-252) and Program OX-1.

[1] Sokolov, V.I. *Russ. J. Org. Chem. (Engl. Transl.)* **35***,* 1230 (1999).
[2] Sokolov V.I., Bashilov V.V., Dolgushin F.M., Abramova N.V., Babievsky K.K., Ginzburg A.G., Petrovskii P.V. *Tetrahedron Lett.* **50**, 5347 (2009).
[3] Wilson S.R., Lu Q., Cao J., Wu Y., Welch C.J., Schuster D.I. *Tetrahedron* **52,** 5131.