

## $\Delta^3$ -Carene in the synthesis of optically pure macrocycles containing cyclopropane, ester, azine or hydrazide fragments

© Gumer Yu. Ishmuratov,\* Marina P. Yakovleva,<sup>+</sup> Galina R. Mingaleeva,  
Olga O. Shakhanova, Rinat R. Muslukhov, Larisa P. Botzman, and Aleksandr G. Tolstikov\*  
*Institute of organic chemistry. Ufa scientific centre of russian academy of sciences.  
Oktyabrya Pr., 71. Ufa, 450054. Russia. Phone/fax: + 7 (347) 235-58-01. E-mail: insect@anrb.rul*

\*Supervising author; <sup>+</sup>Corresponding author

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### Abstract

Basing on the accessible natural monoterpene  $\Delta^3$ -carene we have accomplished an efficient synthesis of optically pure 23-, 24-, 30- and 31-member symmetrical macrocyclic azine diesters and diester dihydrazides sequentially using the reaction of [2+1]-interaction between 1'-[(1S,3R)-3-(2''-hydroxyethyl)-2,2-dimethylcyclopropyl]acetone and glutaric or adipic acid chloranhydrides and that of [1+1]-condensation between intermediate diketo diesters and dihydrazine hydrate or glutaric acid dihydrazide.