

## Benzo- $\gamma$ -pironyl-3-vinyl carboxylic acids in Diels-Alder reactions

© Nikita A. Palev,<sup>\*†</sup> Nikita M. Chernov,

Roman V. Shutov, Alexander E. Shchegolev, and Igor P. Yakovlev

Department of Organic Chemistry. St. Petersburg State Chemical-Pharmaceutical Academy.

Professor Popov St., 14. St. Petersburg, 197376. Russia.

Phone: +7 (812) 234-19-65. E-mail: npalev@mail.ru

\*Supervising author; †Corresponding author

**Keywords:** *Diels-Alder reaction of dihydroxanthone, derivatives of 3-vinyl chromones, enamine.*

### Abstract

Chromonyl-3-acrylic acids react with enamines with previously unknown derivatives of dihydroxanthenes. The reaction rate depends on the electronic nature of the substituent in the sixth position of the chromone. It has been established that the electron-acceptor substituents accelerate the reaction, electron-donor ones slow it down. The experimental data are confirmed by quantum-chemical calculations, and the reaction can be classified as an orbital-controlled.