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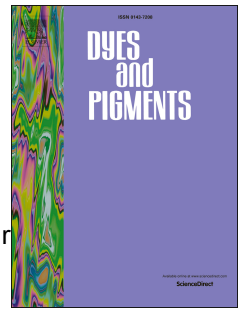

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PII: S0143-7208(17)30010-4

DOI: 10.1016/j.dyepig.2017.03.008

Reference: DYPI 5834

To appear in: *Dyes and Pigments*

Received Date: 5 January 2017

Revised Date: 21 February 2017

Accepted Date: 3 March 2017

Please cite this article as: Irgashev RA, Kazin NA, Makarova NI, Dorogan IV, Malov VV, Tameev AR, Rusinov GL, Metelitsa AV, Minkin VI, Charushin VN, Synthesis and properties of new π-conjugated imidazole/carbazole structures, *Dyes and Pigments* (2017), doi: 10.1016/j.dyepig.2017.03.008.

Synthesis and properties of new π-conjugated imidazole/carbazole structures

Roman A. Irgashev[a,b,*], Nikita A. Kazin[a], Nadezhda I. Makarova[c], Igor V. Dorogan[c], Vladimir V. Malov[d], Alexey R. Tameev[d], Gennady L. Rusinov[a,b], Anatoly V. Metelitsa[c], Vladimir I. Minkin[c,e], and Valery N. Charushin[a,b]

[a]*Postovsky Institute of Organic Synthesis, Ural Division, Russian Academy of Sciences, S. Kovalevskoy Str., 22, Ekaterinburg, 620990, Russia; *Corresponding author: Fax: +7 343 369 30 58; e-mail: irgashev@ios.uran.ru*

[b]*Ural Federal University named after the First President of Russia B. N. Yeltsin, Mira St. 19, Ekaterinburg, 620002, Russia*

[c]*Institute of Physical and Organic Chemistry, Southern Federal University, Stachki Av., 194/2, 344090 Rostov on Don, Russia*

[d]*A.N. Frumkin Institute of Physical Chemistry and Electrochemistry, Russian Academy of Sciences, Leninsky prosp., 31, bld.4, Moscow, 119071, Russia*

[e]*Southern Scientific Center of Russian Academy of Sciences, Chekhov St., 41, 344006 Rostov on Don, Russia*

ABSTRACT

New 3-(1*H*-imidazol-2-yl)-9*H*-carbazoles and 6,6'-di(1*H*-imidazol-2-yl)-9*H*,9'*H*-3,3'-bicarbazoles have been prepared, starting from 9-ethyl-9*H*-carbazole-3-carbaldehyde or 9,9'-diethyl-9*H*,9'*H*-[3,3'-bicarbazole]-6,6'-dicarbaldehyde through their reactions with 4-methoxyaniline or 4-fluoroaniline, benzil or 2,2′-thenil [1,2-di(thien-2,2′-yl) glyoxal] and ammonium acetate on reflux in glacial acetic acid. The obtained compounds have been shown to demonstrate an effective fluorescence in the blue spectral region, exhibiting quantum yields in the range of 0.08−0.51, depending on their molecular structure and solvent polarity. The nature of the observed absorption spectra has been elucidated by the TDDFT calculations.

Keywords: Imidazoles, Carbazoles, Absorption spectra, Photoluminescence, TDDFT calculations, charge mobility.