Supplementary Material

Novel push-pull thieno[2,3-b]indole-based dyes for efficient dye-sensitized solar cells (DSSCs)

Roman A. Irgashev,*a,b Arseny A. Karmatsky,a,b Grigory A. Kim,a Alexey A. Sadovnikov,c Viktor V. Emets,d Vitaly A. Grinberg,d Vladimir K. Ivanov,c,e Sergey A. Kozyukhin,c,e Gennady L. Rusinov,a,b and Valery N. Charushin*a,b

*a Postovsky Institute of Organic Synthesis, Ural Division of the Russian Academy of Sciences, Ekaterinburg, 620990, Russia
b Ural Federal University named after the First President of Russia, B. N. Yeltsin, Ekaterinburg, 620002, Russia
c Kurnakov Institute of General and Inorganic Chemistry RAS, Moscow, 11999, Russia
d Frumkin Institute of Physical Chemistry and Electrochemistry RAS, Moscow, 119071, Russia
e Department of Chemistry, National Research Tomsk State University, Tomsk, 634050, Russia
E-mail: irgashev@ios.uran.ru

Content

$^1$H and $^{13}$C NMR spectra of all new compounds  S2 – S26
Cyclic voltammetry (CV) curves of dyes IK 3-6  S27– S28
H NMR (solvent: DMSO-d$_6$)
$^{13}$C NMR (solvent: DMSO-$d_6$)
$^1$H NMR (solvent: CDCl$_3$)
$^{13}$C NMR (solvent: CDCl$_3$)
$^1$H NMR (solvent: DMSO-$d_6$)
$^{13}$C NMR (solvent: CDCl$_3$)
$^1$H NMR (solvent: CDCl$_3$)
$^{13}$C NMR (solvent: CDCl$_3$)
\(^1\text{H NMR (solvent: CDCl}_3\text{)}\)
$^{13}$C NMR (solvent: CDCl$_3$)
$^1$H NMR (solvent: CDCl$_3$)
$^{13}$C NMR (solvent: CDCl$_3$)
$^1$H NMR (solvent: DMSO-$d_6$)
$^{13}$C NMR (solvent: DMSO-$d_6$)
$^{13}$C NMR (solvent: DMSO-$_d_6$)
"H NMR

Page S18

©ARKAT-USA, Inc.
$^{13}$C NMR

![S19](image-url)
$^1$H NMR (solvent: DMSO-$d_6$)
$^{13}$C NMR (solvent: DMSO-$d_6$)
$^1$H NMR (solvent: DMSO-$d_6$)
$^{13}$C NMR (solvent: DMSO-$d_6$)
$^1$H NMR (solvent: DMSO-$d_6$)
$^{13}$C NMR (solvent: DMSO-$d_6$)

![NMR spectrum of compound IK 5](image-url)
$^1$H NMR (solvent: DMSO-$d_6$)
Cyclic voltammetry (CV) curves of dyes IK 3-6

CV curve of dye IK 3

CV curve of dye IK 4
CV curve of dye IK 5

CV curve of dye IK 6