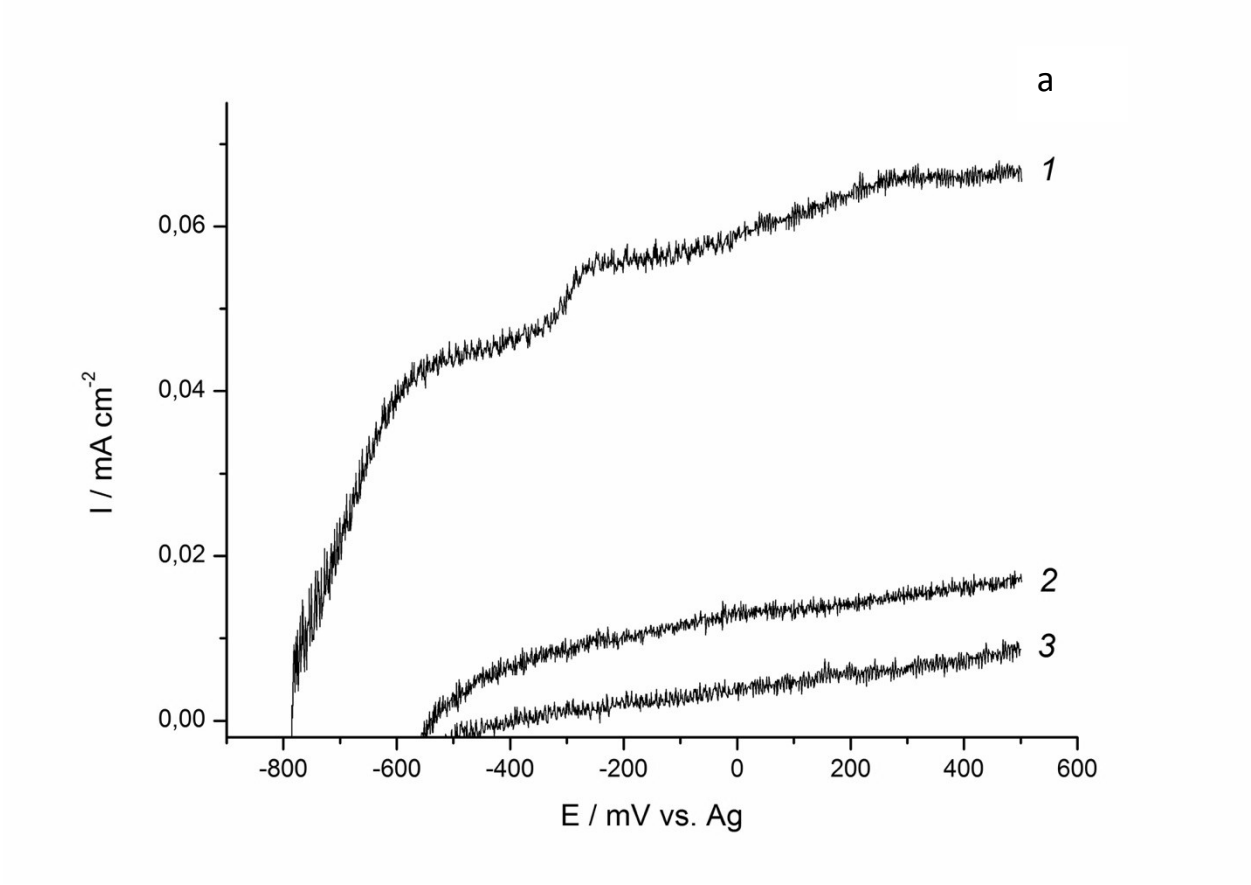
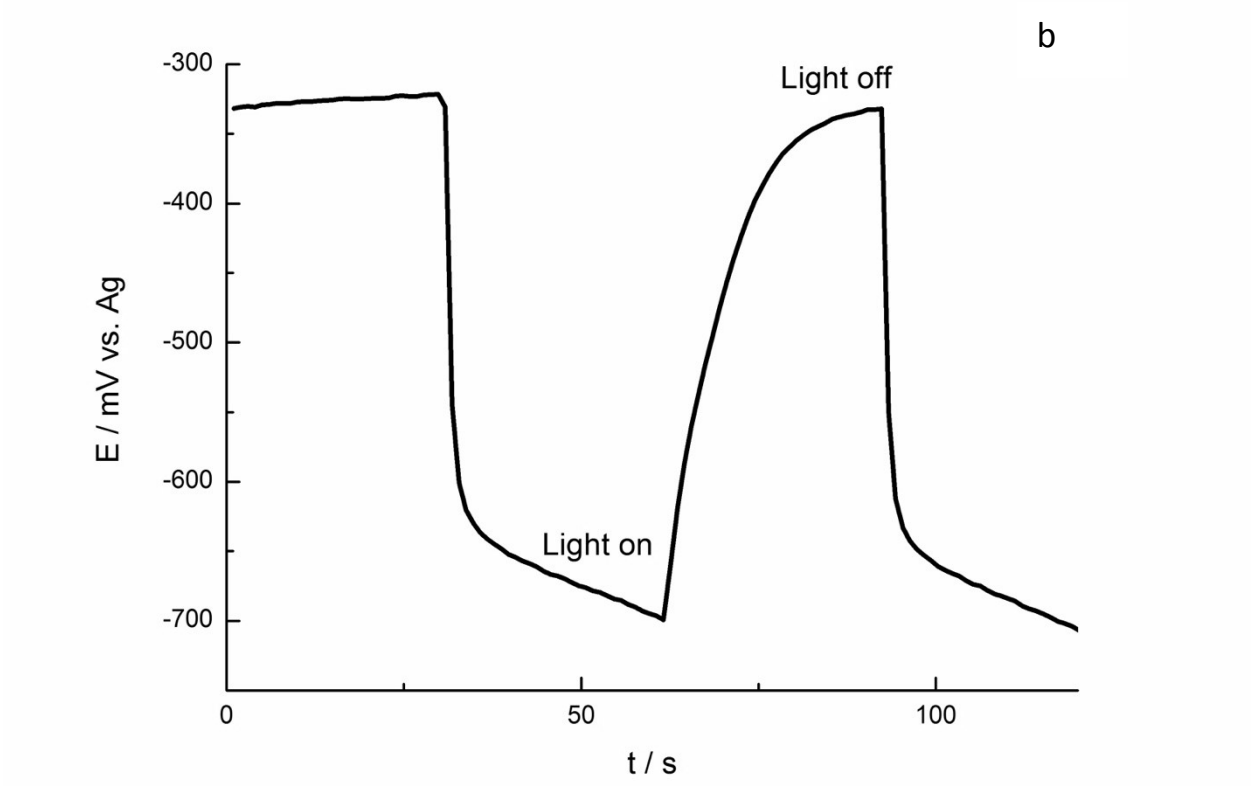
Electronic Supplementary Material (ESI) for New Journal of Chemistry.

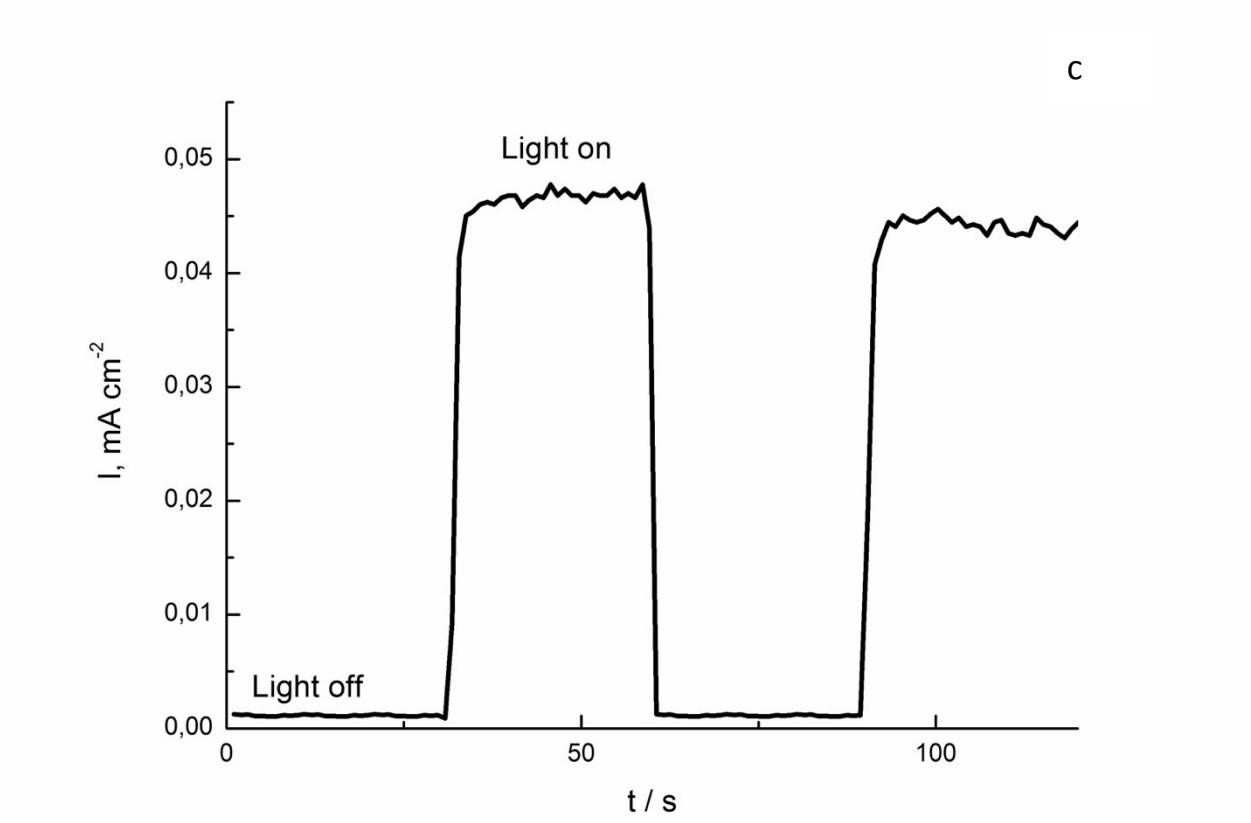
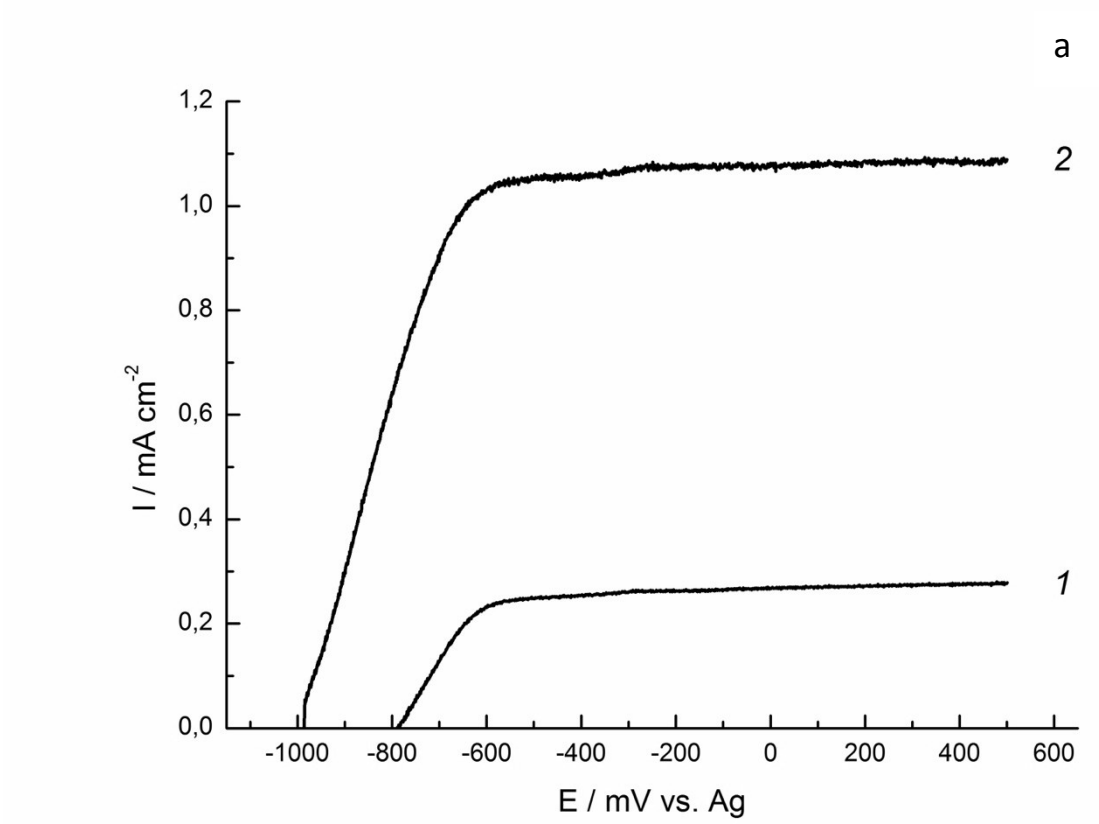
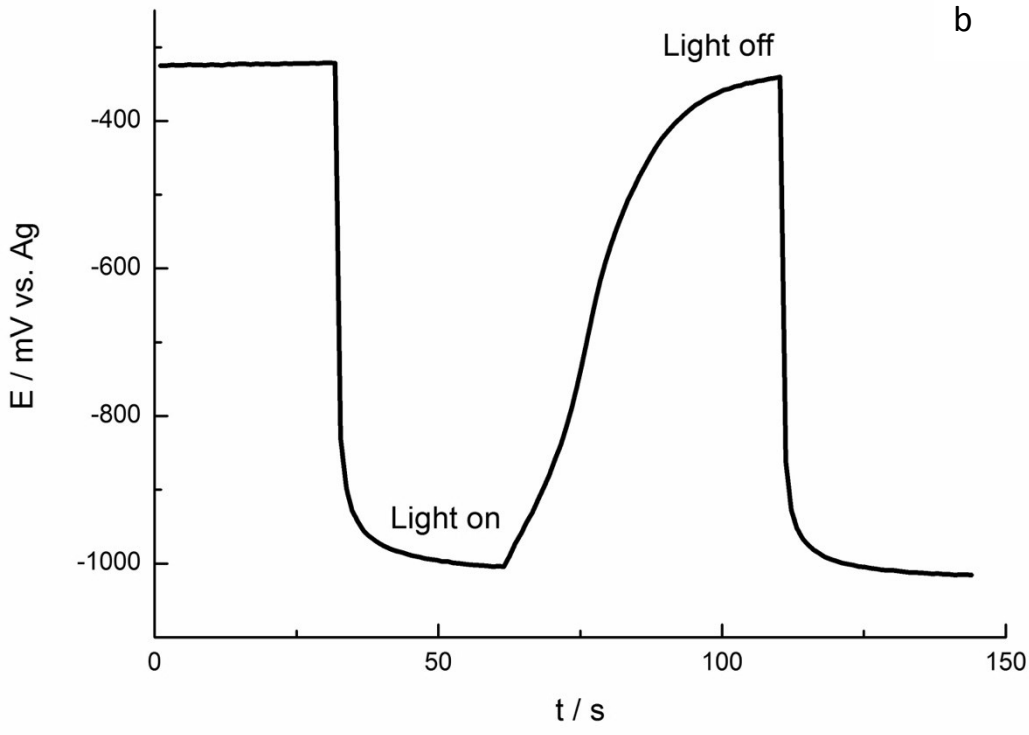



Fig.S1. (a) Voltammograms obtained at the (*1*) *n*-TiO2 + 0.23 at % In; (*2*) *n*-$TiO_2$ + 1.21 at. % In; and (*3*) *n*-$TiO_2$ + 2.52 at. % In film photoanodes in a 0.1 M KOH + 200 µl (4.9 mM) $CH_3OH$ aqueous solution under monochromatic light illumination. Potential scan rate is 0.01 V $s^{-1}$.
(b, c) Transients of photopotential (b) and photocurrent (c) obtained at the *n*-$TiO_2$ + 0.23 at.% In photoanode' potential E = 0.0 V in a 0.1 M KOH + 200 µl (4.9 mM) $CH_3OH$ aqueous solution in "dark" conditions and under illumination. Illumination conditions: xenon lamp (150 W) with a 461 nm filter; illumination power at the photoanode is 10 mW $cm^{-2}$.


a
1,2
1,0
0,8
0,6
0,4
0,2
0,0
I / mA cm-2
2
1
-1000
-800
-600
-400
-200
0
200
400
600
E / mV vs. Ag


b
Light off
Light on
-400
-600
-800
-1000
E / mV vs. Ag
0
50
100
150
t / s

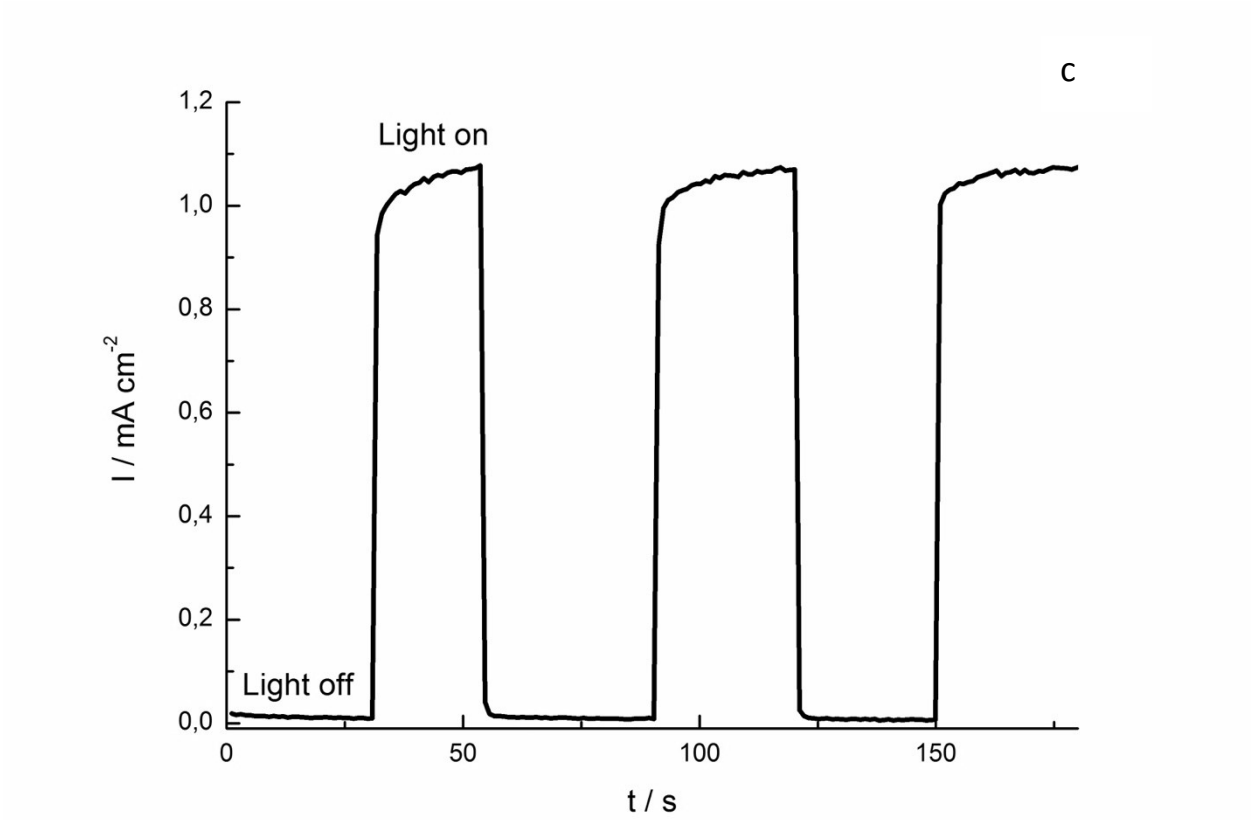



Fig. S2. (a) Voltammograms obtained at the (*n*-$TiO_2$ + 0.23 at % In) film photoanode under visible light illumination in (1) 0.1 M KOH and (2) 0.1 M KOH + 200 µl (4.9 mM) $CH_3OH$ aqueous solutions. Potential scan rate is 0.01 V $s^{-1}$.
(b, c) Transients of photopotential (b) and photocurrent (c) obtained at the photoanode's potential E = 0.0 V in a 0.1 M KOH + 200 µl (4.9 mM) $CH_3OH$ aqueous solution in "dark" conditions and under illumination. Illumination conditions: xenon lamp with a UV filter; illumination power at the photoanode is 100 mW $cm^{-2}$.

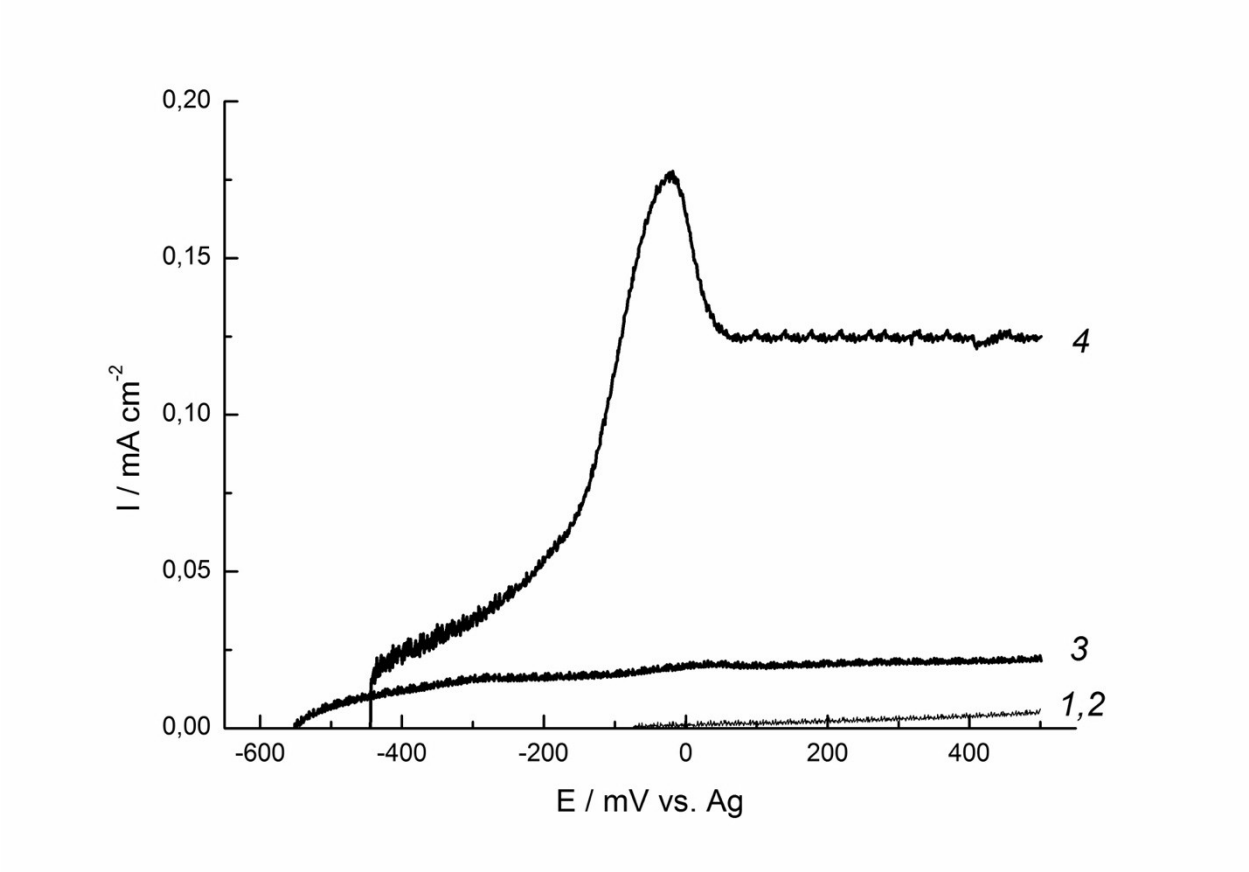



Fig.S3. Voltammograms obtained at the (*n*-TiO2 + 0.23 at % In) film photoanode in "dark" conditions (1, 2) and under monochromatic light illumination (3, 4) in 0.1 M KOH (1, 3) and 0.1 M KOH + 350 µl (9.2 mM) HCOOH (2, 4) aqueous solutions. Potential scan rate is 0.01 V $s^{-1}$. Illumination conditions: xenon lamp (150 W) with a 461 nm filter; illumination power at the photoanode is 10 mW $cm^{-2}$.

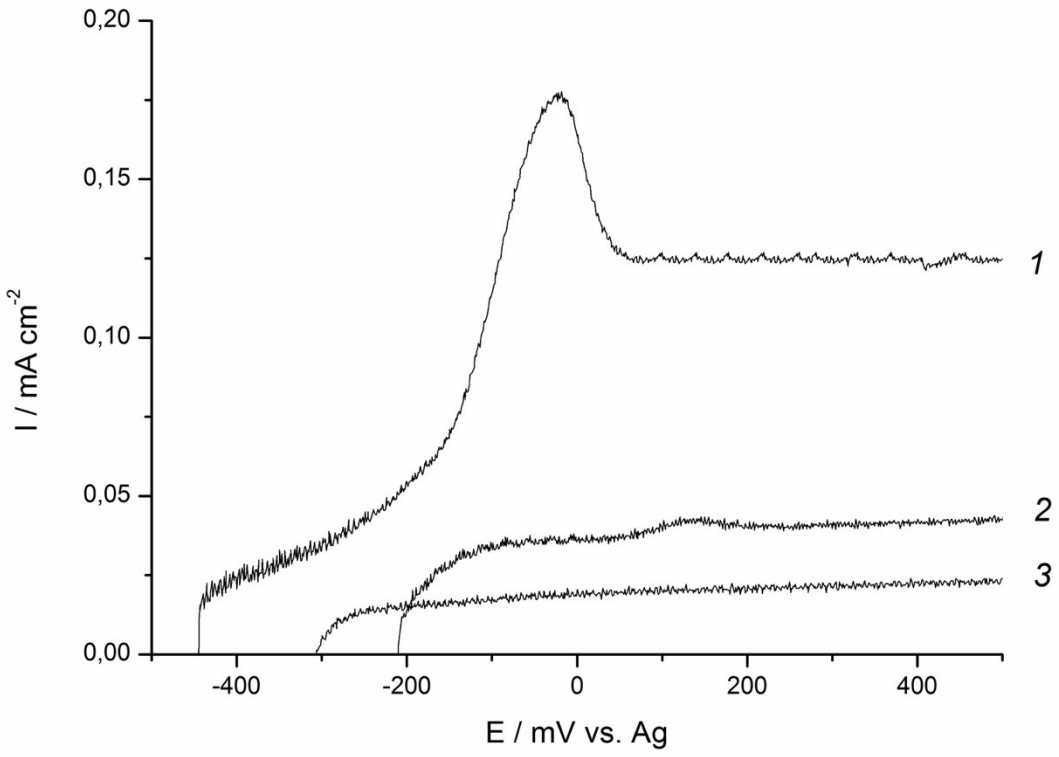



Fig.S4. Voltammograms obtained at the *n*-TiO2 + 0.23 at % In (*1*); *n*-$TiO_2$ + 1.21 at. % In (*2*); and *n*-$TiO_2$ + 2.52at. % In (*3*) film photoanodes in a 0.1 M KOH + 350 µl (9.2 mM) HCOOH aqueous solution under monochromatic light illumination. Potential scan rate is 0.01 V $s^{-1}$. Illumination conditions: xenon lamp (150 W) with a 461 nm filter; illumination power at the photoanode is 10 mW $cm^{-2}$.

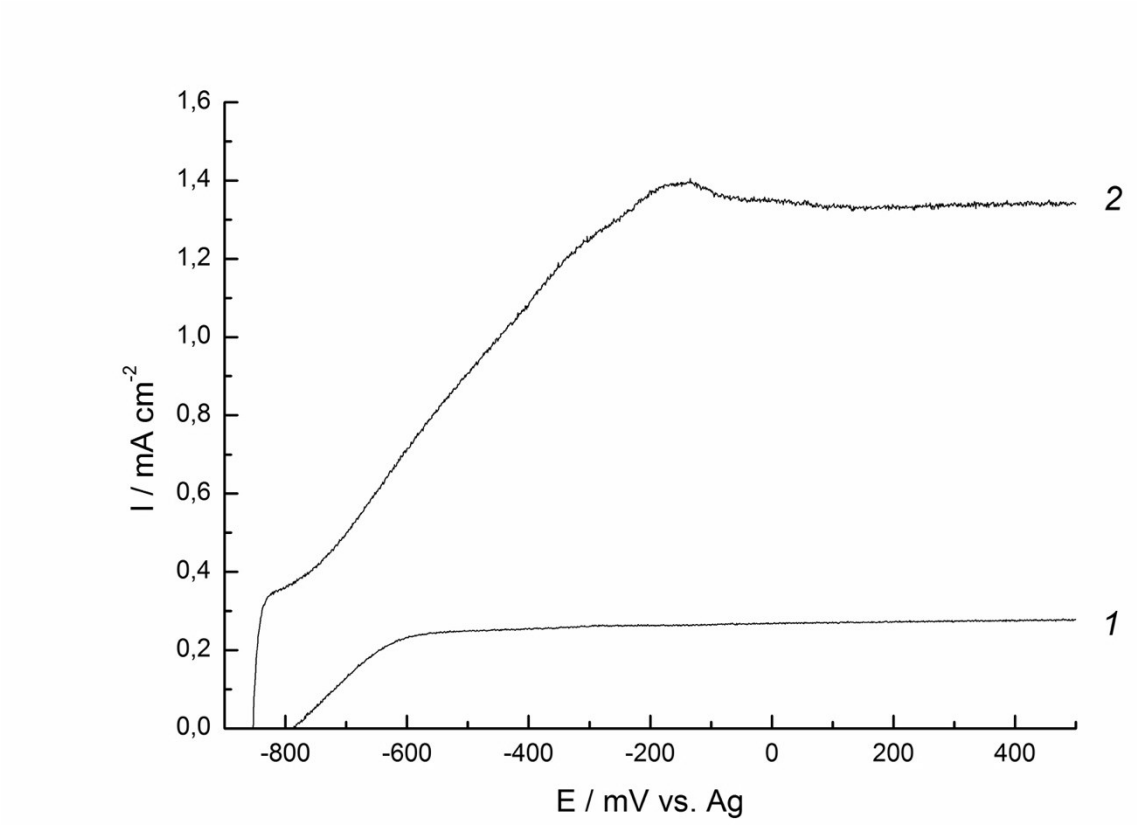



Fig.S5. Voltammograms obtained at the *n*-TiO2 + 0.23 at % In film photoanode in (1) 0.1 M KOH; and (2) 0.1 M KOH + 350 µl (9.2 mM) HCOOH aqueous solutions under visible light illumination. Potential scan rate is 0.01 V $s^{-1}$. Illumination conditions: xenon lamp with a UV filter; illumination power at the photoanode is 100 mW $cm^{-2}$.

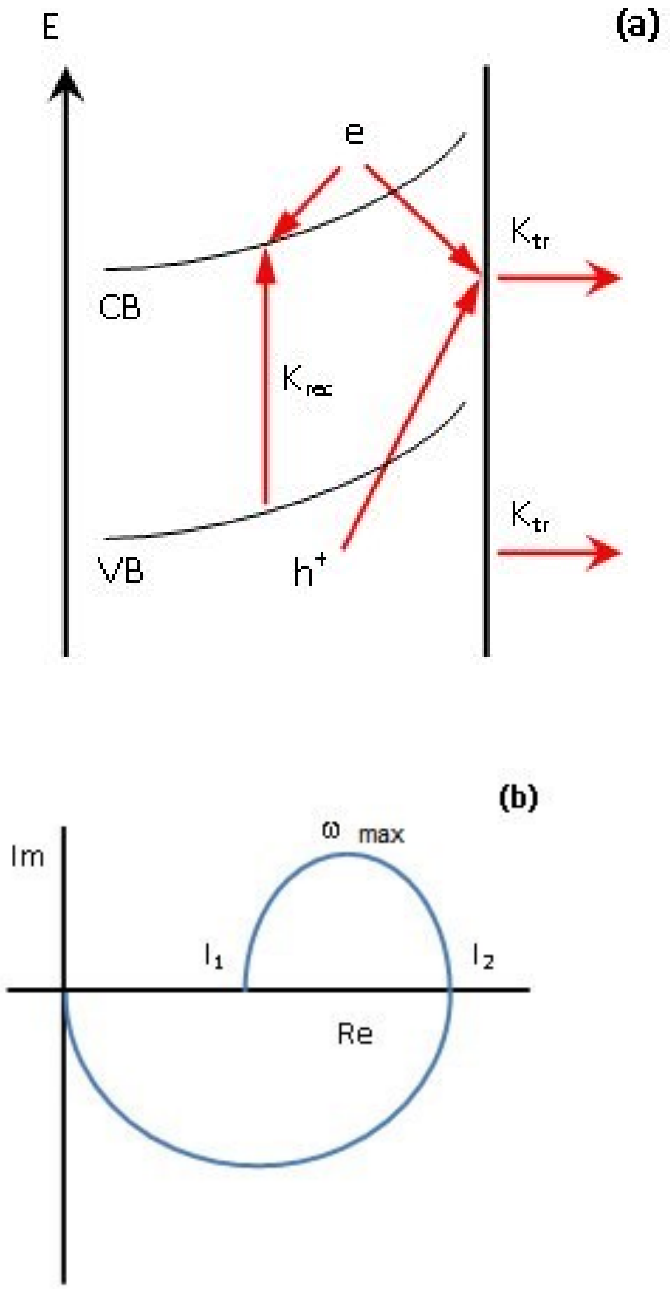



Fig. S6. Scheme (a) illustrates the process of generation of holes on the surface of the photoanode; scheme (b) illustrates the IMPS graph.

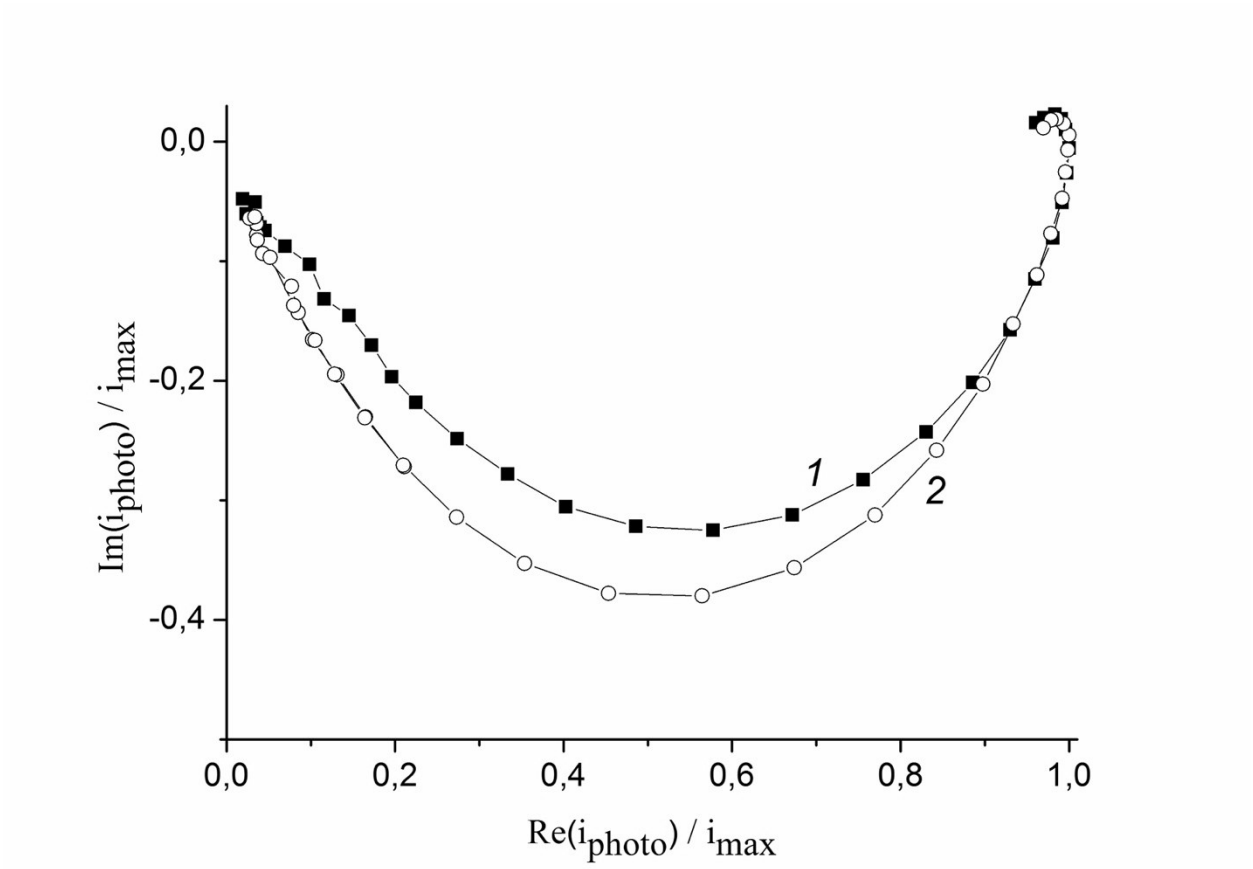



Fig.S7. Normalized IMPS spectra obtained at -0.8 V in a 0.1 M KOH + 200 µl (4.9 mM) MeOH aqueous solution at (*1*) $TiO_2$ + 0.23 at. % In; and (*2*) $TiO_2$ + 2.52 at. % In photoanodes under monochromatic light illumination (369 nm; 7.5 mW $cm^{-2}$).

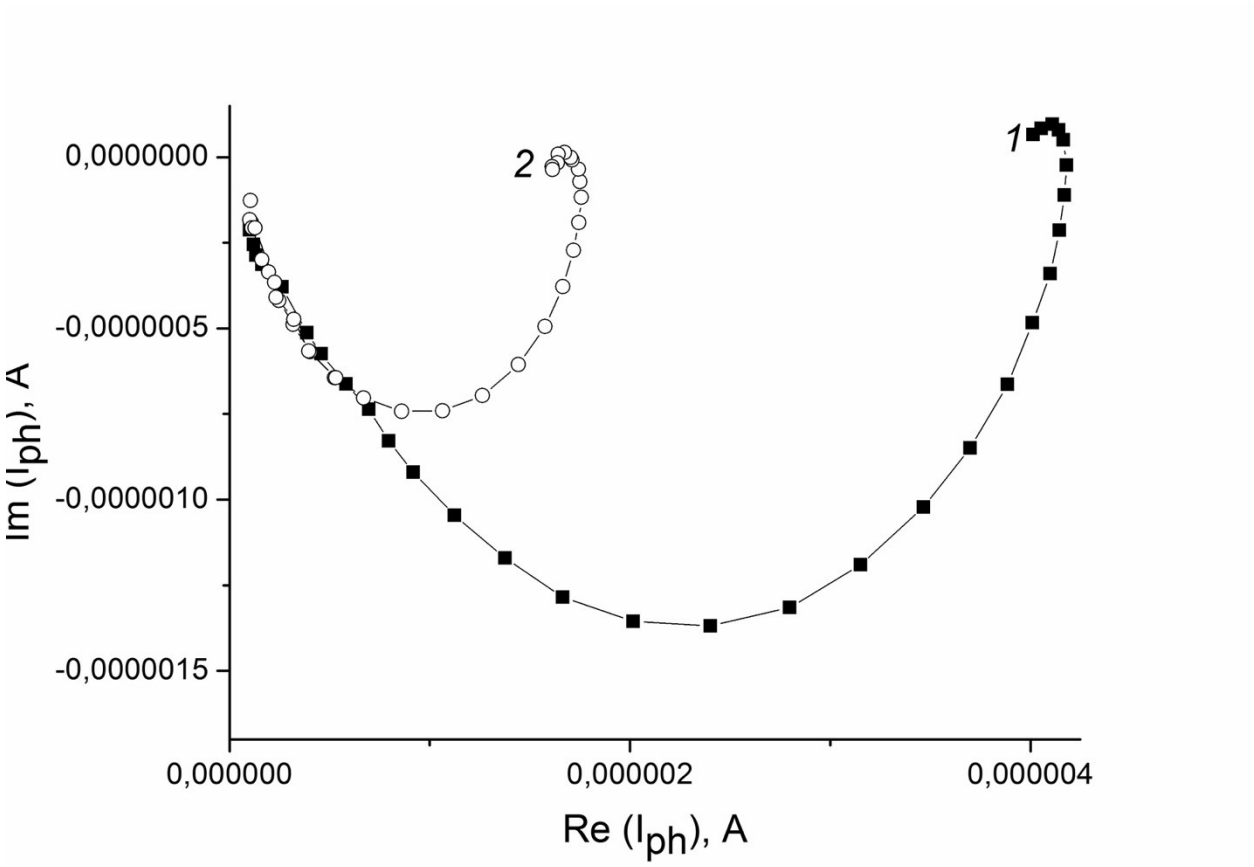



Fig.S8. IMPS spectra obtained at -0.8 V in a 0.1 M KOH + 200 µl (4.9 mM) MeOH aqueous solution at (*1*) $TiO_2$ + 0.23 at. % In; and (*2*) $TiO_2$ + 2.52 at. % In photoanodes under monochromatic light illumination (369 nm; 7.5 mW $cm^{-2}$).