HOKKAIDO UNIVERSITY

Title	Luminescence properties of ZnO-M heterostructures fabricated by galvanic-submerged photosynthesis of crystallites
Author(s)	Hiraiwa, Kento; Takahashi, Yuki; Mizuno, Junichi et al.
Citation	Applied surface science, 489, 269-277 https://doi.org/10.1016/j.apsusc.2019.05.292
Issue Date	2019-09-30
Doc URL	https://hdl.handle.net/2115/82834
Rights	©2019. This manuscript version is made available under the CC-BY-NC-ND 4.0 license http://creativecommons.org/licenses/by-nc-nd/4.0/
Rights(URL)	https://creativecommons.org/licenses/by-nc-nd/4.0/
Type	journal article
File Information	Hiraiwa et.al App.Sur.Sci_Appendix A. Supplementary- data.pdf

Hokkaido University Collection of Scholarly and Academic Papers : HUSCAP

Electronic Supplementary Information

Luminescence properties of ZnO-M heterostructures fabricated by galvanic-submerged photosynthesis of crystallites

Kento Hiraiwa[a], Yuki Takahashi[a], Junichi Mizuno[a], Melbert Jeem[b], Seiichi Watanabe[b*]

[a]Graduate School of Engineering, Hokkaido University, N13, W8, Kita-ku, Sapporo, Hokkaido, 060-8628, Japan.

[b]Faculty of Engineering, Hokkaido University, N13, W8, Kita-ku, Sapporo, Hokkaido, 060-8628, Japan.

* Corresponding author at: Faculty of Engineering, Hokkaido University, N13, W8, Kita-ku, Sapporo, Hokkaido, 060-8628, Japan

Email address: sw004@eng.hokudai.ac.jp (S. Watanabe)

Table S1. Weight change of ZnO-M samples after G-SPSC. ΔV is standard electrode potential difference of noble metals M with Zn. Δn is the average value increment per unit area of ZnO NRs formation. Average value was taken after three times measurement.

Metal	Au	Pt	Ag	Cu	W	Ni
ΔV	2.3 V	1.95 V	1.6 V	1.2 V	0.89 V	0.5 V
Δn (10^{-5} mol/cm^2)	2.53	1.35	0.778	0.65	0.69	0.61

Table S2. Quantitative XPS analysis of ZnO-M samples within O 1s spectra.

Samples	ZnO			$Zn(OH)_2/V_O$			H_2O		
	Peak (eV)	FWHM	Percentage (%)	Peak (eV)	FWHM	Percentage (%)	Peak (eV)	FWHM	Percentage (%)
ZnO-Au	530.1	0.8	57.6	531.6	1.1	24.7	532.5	1.1	17.7
ZnO-Pt	530.1	0.7	63.9	531.5	0.9	29.4	532.3	0.6	6.7
ZnO-Ag	530.1	0.7	67.1	531.5	0.8	26.6	532.3	0.6	6.3
ZnO-Cu	530.4	0.7	63.0	531.6	0.9	23.3	532.4	0.8	11.2
ZnO-W	530.3	0.7	66.7	531.6	0.9	23.7	532.3	0.9	13.8
ZnO-Ni	530.3	0.7	53.3	531.6	0.9	24.6	532.3	1.1	22.1