Electronic Supplementary Information

Single-LED solar simulator for amorphous Si and dye-sensitized solar cells

Tomohiko Nakajima,* Kentaro Shinoda and Tetsuo Tsuchiya

Advanced Manufacturing Research Institute, National Institute of Advanced Industrial Science and Technology, Tsukuba Central 5, 1-1-1 Higashi, Tsukuba, Ibaraki 305-8565, Japan.

Sample synthesis and characterization

Polycrystalline samples were prepared by a solid state reaction. Mixed powder of starting reagents in an appropriate molar ratio were ground, pressed into a pellet and heated. The detailed synthetic conditions are listed in Table S1. The phase analysis was carried out by X-ray diffraction (XRD) using a SmartLab (Rigaku). The surface morphology of polycrystalline samples was studied by a scanning electron microscope (SEM) using a JSM5400 (JEOL).

Table S1 Synthesis conditions for polycrystalline samples.

| Material	Starting reagents[a]	Temp. / °C	Time / h	Atmosphere
$CsVO_3$	Cs_2CO_3 (5mol% excess), V_2O_5	430	24	air
$Zn_3V_2O_8$	ZnO, V_2O_5	750	24	air
$Ba_{2.91}MgSi_2O_8:Eu_{0.04},Mn_{0.05}$	$BaCO_3$, MgO, SiO_2 Eu_2O_3, $MnCO_3$, NH_4Cl[a]	1300	3	$1\%H_2/Ar$
$Ba_{1.83}Sr_{0.5}Ca_{0.5}MgSi_2O_8:Eu_{0.02}Mn_{0.15}$	$BaCO_3$, $SrCO_3$, $CaCO_3$, MgO, SiO_2 Eu_2O_3, $MnCO_3$, NH_4Cl[a]	1300	3	$1\%H_2/Ar$
$Sr_{2.83}MgSi_2O_8:Eu_{0.02}Mn_{0.15}$	$SrCO_3$, MgO, SiO_2, Eu_2O_3, $MnCO_3$, NH_4Cl[a]	1300	3	$1\%H_2/Ar$
$Ca_{2.83}MgSi_2O_8:Eu_{0.02}Mn_{0.15}$	$CaCO_3$, MgO, SiO_2, Eu_2O_3, $MnCO_3$, NH_4Cl[a]	1300	3	$1\%H_2/Ar$
$Ba_{0.985}Mg_{1.8}Si_2O_7:Eu_{0.015}Mn_{0.2}$	$BaCO_3$, MgO, SiO_2, Eu_2O_3, $MnCO_3$, NH_4Cl[a]	1300	3	$1\%H_2/Ar$
$Ba_{0.95}Al_2Si_2O_8:Eu_{0.05}$	$BaCO_3$, MgO, Al_2O_3, Eu_2O_3, NH_4Cl[a]	1300	3	$1\%H_2/Ar$
$Sr_{0.95}Al_2Si_2O_8:Eu_{0.05}$	$SrCO_3$, MgO, Al_2O_3, Eu_2O_3, NH_4Cl[a]	1300	3	$1\%H_2/Ar$
$LiGaO_2:Fe_{0.01}$	Li_2CO_3, Ga_2O_3, Fe acetylacetonate	1000	12	air

[a] 30 mol% NH_4Cl was added as a flux
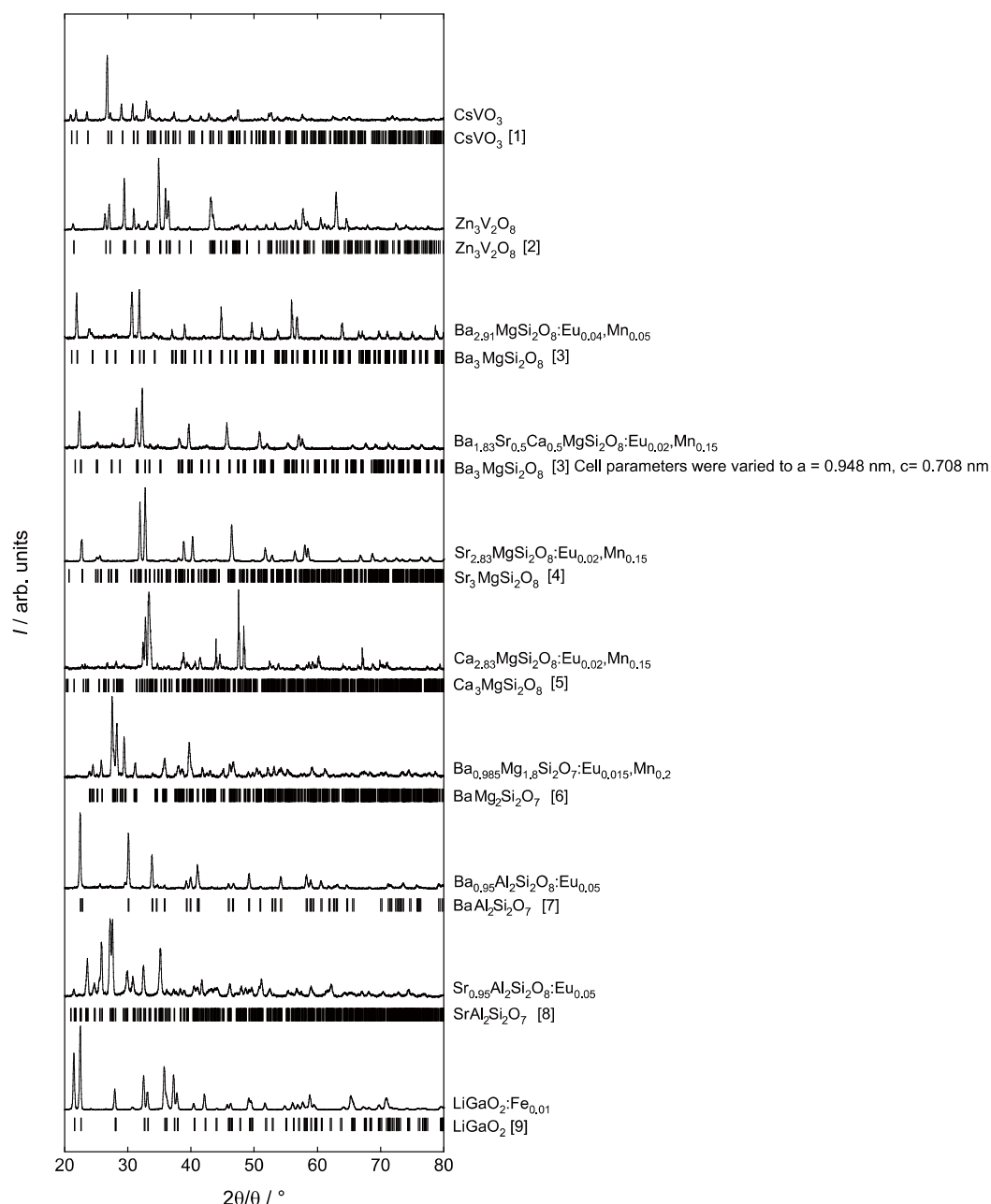
Figure S1: XRD patterns of obtained samples, and simulated peak positions (vertical marks) as references. The simulated peak positions were not refined for our samples.
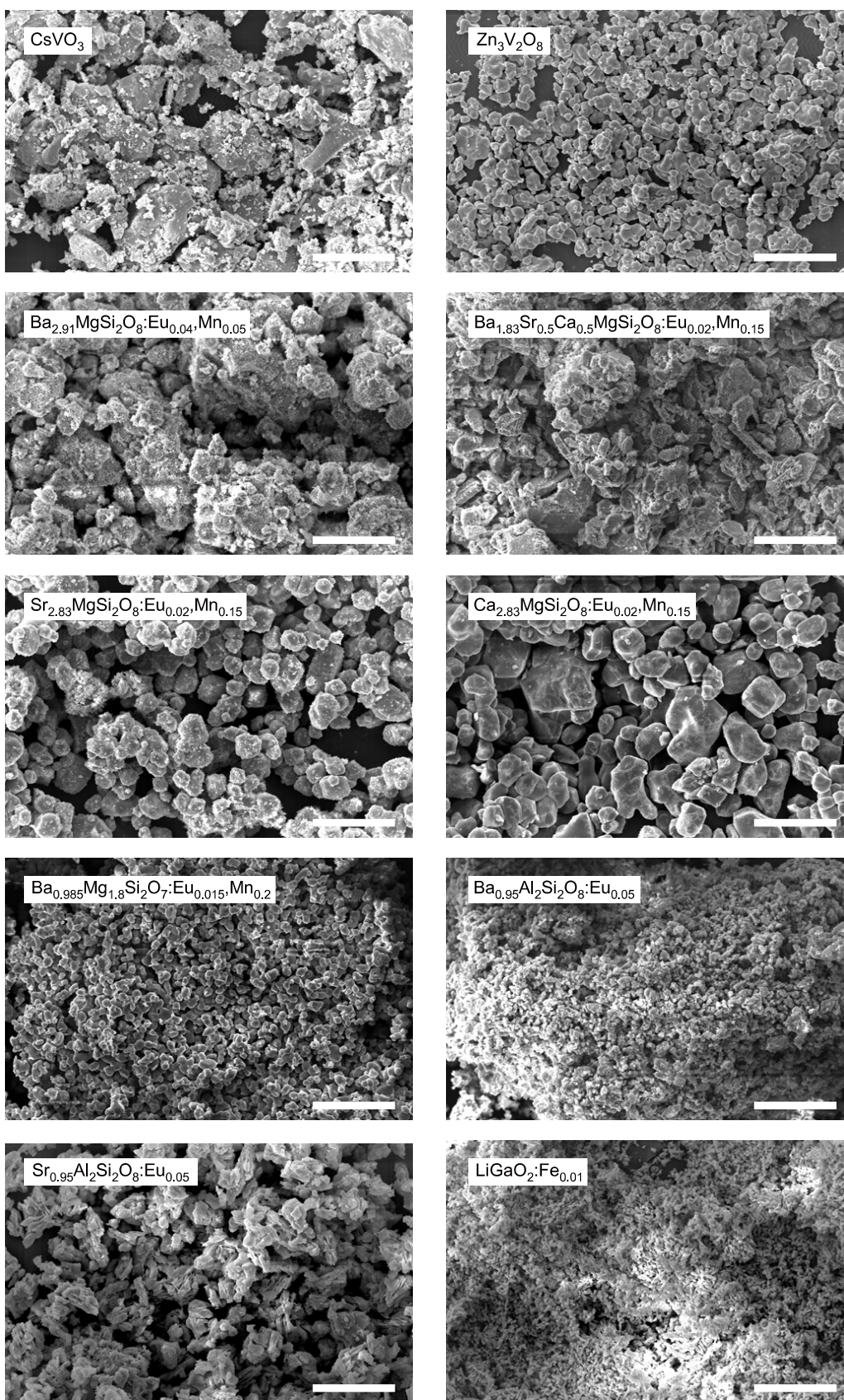
Figure S2: SEM images for the obtained samples. The scale bar indicates 50 μm.

References

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