Supplementary Material for CrystEngComm

Size-controlled synthesis of ZIF-8 particles and their pyrolytic conversion into ZnO aggregates as photoanode materials of dye-sensitized solar cells

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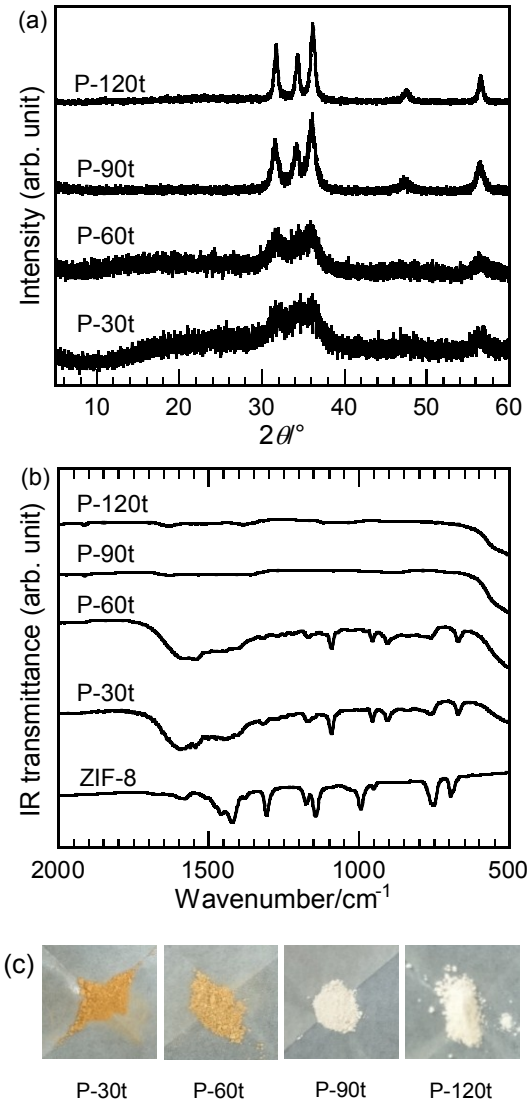

Fig. S1 (a) XRD patterns, (b) FT-IR spectra together with that of ZIF-8, and (c) optical images of the P-*X*t samples.

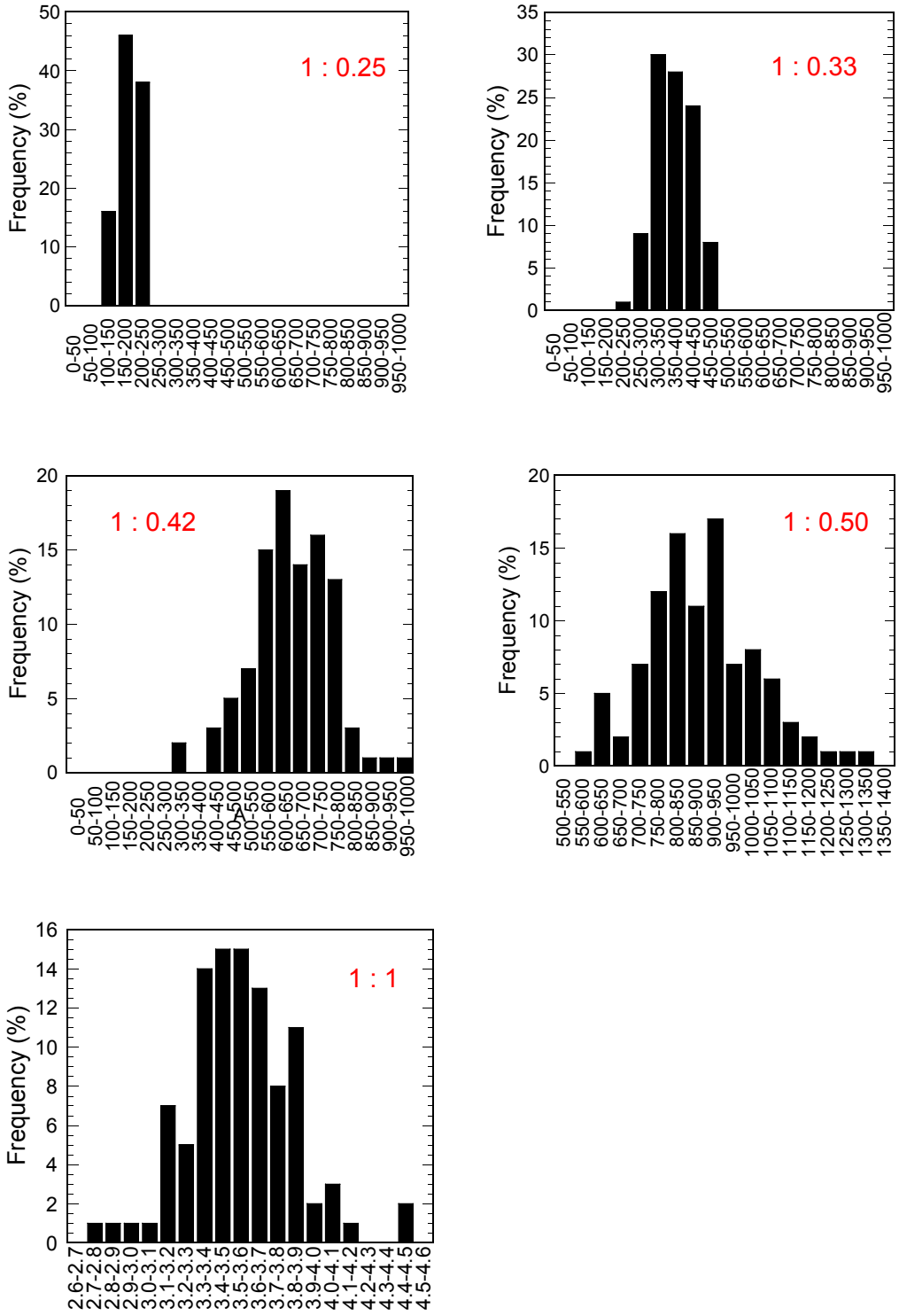

Fig. S2 The size distribution of the ZIF-8 particles obtained from the solutions with the 2-methylimidazole : 1-methylimidazole ratio of 1 : 0.25, 1 : 0.33, 1 : 0.42, 1 : 0.50, and 1 : 1.

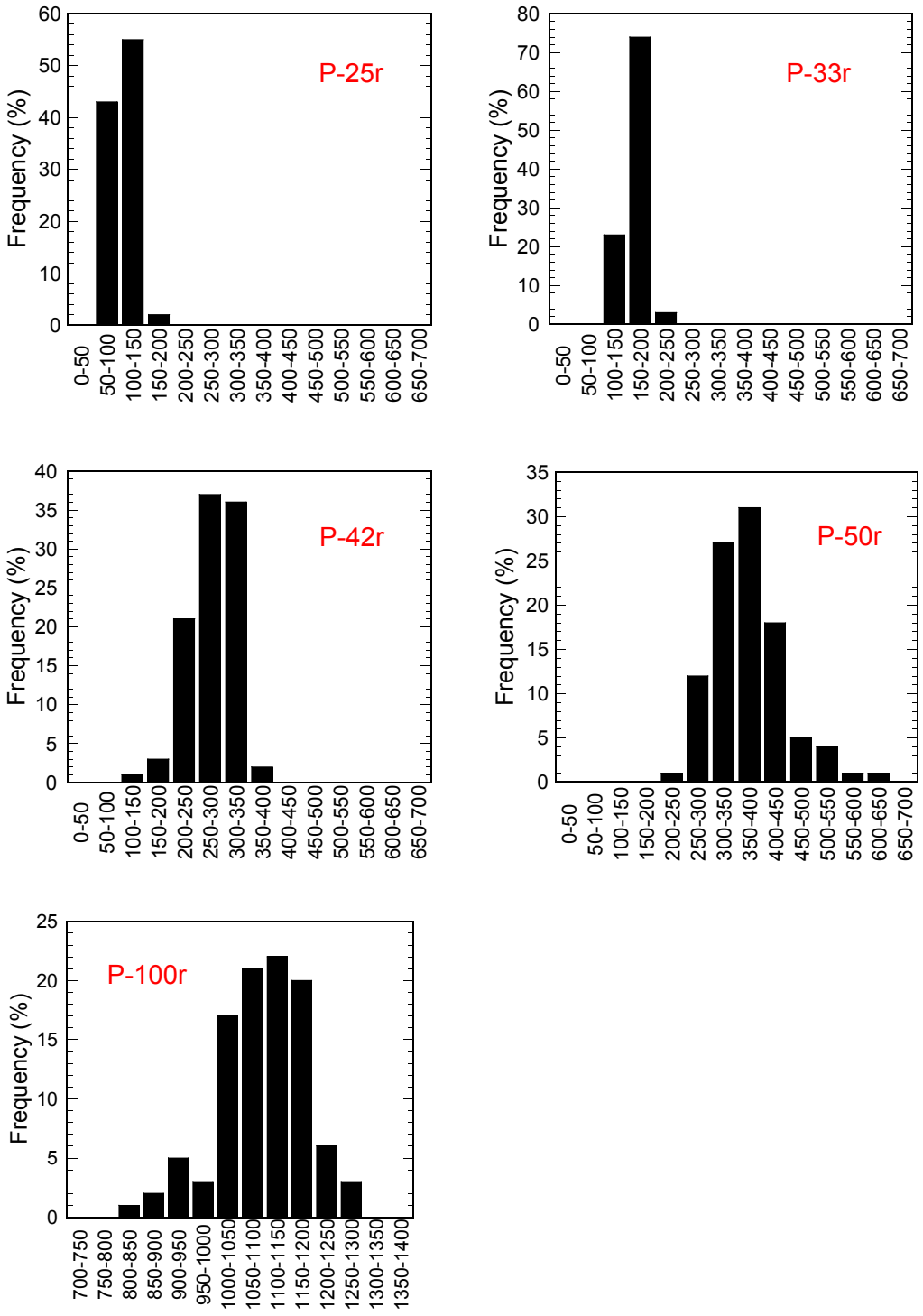

Fig. S3 The size distribution of the ZnO aggregates (the P-*Y*r samples).

Table S1 Fabrication conditions and performance of dye-sensitized photoanodes using ZnO aggregates: the method for synthesizing aggregates, the maximum processing temperature for the film fabrication, the thickness of the obtained film, the sensitizing dye, the I^-/I_3^- redox electrolyte used for measuring the DSSC performance, and the maximum power conversion efficiency.

Method for synthesizing ZnO aggregates	Maximum processing temperature	Film thickness	Dye	Electrolyte	Maximum conversion efficiency	Ref.
Hydrolysis of zinc salt in polyol medium	350 ºC	9 μm	N3	0.1 M LiI 0.5 M TBAI 0.1 M I_2 0.5 M TBP acetonitrile	5.4%	29
Hydrothermal and solvothermal process	350 ºC	4.5 μm	N3	0.3 M LiI 1.0 M DMPII 0.06 M I_2 0.5 M TBP acetonitrile	3.44%	39
Hydrothermal process	500 ºC	27 μm	N719	0.05 M LiI 1.0 M BMIMI 0.03 M I_2 0.5 M TBP acetonitrile valeronitrile	5.16%	40
Template-free aqueous solution method	150 ºC	32 μm	D149	0.6 M DMPII 0.05 M I_2 0.5 M TBP acetonitrile	4.42%	41
Polyol process	400 ºC	30.0 μm	D149	0.5 M DMPII 0.05 M I_2 acetonitrile	4.58%	42
Aqueous solution method	150 ºC	26.0 μm	N719	0.1 M LiI 0.6 M DMPII 0.05 M I_2 0.5 M TBP acetonitrile	4.03%	43
Aqueous solution method	150 ºC	32 μm	D149	0.6 M DMPII 0.05 M I_2 0.5 M TBP acetonitrile	4.42%	44
Pyrolysis of ZIF-8	450 ºC	9 μm	N719	0.1 M LiI 0.6 M DMPII 0.05 M I_2 1.0 M TBP 3-methoxy-propionitrile	3.37%	This work

TBAI: tetrabutylammonium iodide

TBP: 4-tert-butylpyridine

DMPII: 1,2-dimethyl-3-propylimidazolium iodide

BMIMI: 1-butyl-3-methylimidazolium iodide