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Effects of annealing processing on the oxide derived $Cu2ZnSn(S_X, Se_{1-X})_4$ thin films

Guilin Chen, Miaoju Wu, Weihuang Wang, Jin Zhang, Limei Lin, Jinyang Liu, Fachun Lai

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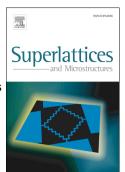
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ACCEPTED MANUSCRIPT

1	Effects of annealing processing on the oxide derived
2	$Cu_2ZnSn(S_x, Se_{1-x})_4$ thin films
3	Guilin Chen ^{1,2, #,*} , Miaoju Wu ^{1, #} , Weihuang Wang ¹ , Jin Zhang ¹ , Limei Lin ¹ , Jinyang
4	Liu ¹ , Fachun Lai ^{1,2}
5	¹ Fujian Provincial Key Laboratory of Quantum Manipulation and New Energy
6	Materials, College of Physics and Energy, Fujian Normal University, Fuzhou 350007,
7	China
8	² Fujian Provincial Collaborative Innovation Center for Optoelectronic
9	Semiconductors and Efficient Devices, Xiamen, 361005, China
10	# These authors contributed equally to this work and should be considered co-first
11	authors.
12	*Corresponding author: Tel.: Tel./fax: +86 591 22867577
13	Email address: glchen@fjnu.edu.cn (G. Chen)
14	
15	Abstract
16	To reveal the effects of annealing conditions on the formation mechanisms of
17	$Cu_2ZnSn(S_x,Se_{1-x})_4$ (CZTSSe) and the related secondary phases, and improve the
18	crystallization of the films simultaneously, different annealing processing was studied.
19	In this work, the uniform Cu-Zn-Sn oxides precursors have been grown on glass
20	substrates by doctor blade. Whereafter, those precursor films were sulfurized first and
21	then selenized at different temperatures to prepare high-quality pure phase CZTSSe
22	absorber films. The effects of annealing conditions on structural, morphological and

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