Roland Mainz

List of Publications by Year
in descending order

71 papers	2,005 citations	257450 24 h-index	254184 43 g-index
76 all docs	76 docs citations	76 times ranked	2059 citing authors

#	Article	IF	Citations
1	Effects of material properties of bandâ€gapâ€graded Cu(In,Ga)Se₂ thin films on the onset of the quantum efficiency spectra of corresponding solar cells. Progress in Photovoltaics: Research and Applications, 2022, 30, 1238-1246.	8.1	5
2	Optoelectronic Inactivity of Dislocations in Cu(In,Ga)Se₂ Thin Films. Physica Status Solidi - Rapid Research Letters, 2021, 15, 2100042.	2.4	2
3	Phototransport Properties of <mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML" display="inline" overflow="scroll"><mml:msub><mml:mrow><mml:mi>Cu</mml:mi><mml:mi>In</mml:mi><mml:mi>Se</mml:mi></mml:mrow><mm Thin Films: The Influence of <mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML" display="inline" overflow="scroll"><mml:mi>Na</mml:mi></mml:math> and Planar Defects. Physical Review Applied, 2020, 14, .	3.8	6
4	Dependence of phase transitions on halide ratio in inorganic CsPb(Br_{<i>x</i>}I_{1â^'<i>x</i>})₃ perovskite thin films obtained from high-throughput experimentation. Journal of Materials Chemistry A, 2020, 8, 22626-22631.	10.3	20
5	Stress Formation During <mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML" display="inline" overflow="scroll"><mml:mi>In</mml:mi></mml:math> - <mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML" display="inline" overflow="scroll"><mml:mi>Ga</mml:mi></mml:math> Interdiffusion in Thin-Film <mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML" display="inline" overflow="scroll"><mml:msub><mml:mrow><mml:mi>Cu</mml:mi><mml:mi>In</mml:mi></mml:mrow><mml:mrow><mml:mn>1</mm	3.8	2
6	High-temperature decomposition of Cu₂BaSnS₄ with Sn loss reveals newly identified compound Cu₂Ba₃Sn₂S₈. Journal of Materials Chemistry A, 2020, 8, 11346-11353.	10.3	8
7	Reaction Pathway for Efficient Cu₂ZnSnSe₄ Solar Cells from Alloyed Cuï£¿Sn Precursor via a Cuâ€Rich Selenization Stage. Solar Rrl, 2020, 4, 2000124.	5.8	13
8	Investigation of near-stoichiometric polycrystalline CuInSe2 thin films by photoreflectance spectroscopy. Journal of Applied Physics, 2020, 127, 125701.	2.5	3
9	Secondary-Phase-Assisted Grain Boundary Migration in CuInSe2. Physical Review Letters, 2020, 124, 095702.	7.8	5
10	Radiative recombination properties of near-stoichiometric <mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML"><mml:mrow><mml:mi>CuInS</mml:mi><mml:msub><mml:mi mathvariant="normal">e</mml:mi><mml:mn>2</mml:mn></mml:msub></mml:mrow></mml:math> thin films. Physical Review Materials, 2020, 4, .	2.4	2
11	Selenization of CuInS₂ by rapid thermal processing â€" an alternative approach to induce a band gap grading in chalcopyrite thin-film solar cell absorbers?. Journal of Materials Chemistry A, 2019, 7, 2087-2094.	10.3	5
12	Stacking fault reduction during annealing in Cu-poor CuInSe2 thin film solar cell absorbers analyzed by <i>in situ</i> XRD and grain growth modeling. Journal of Applied Physics, 2019, 125, .	2.5	10
13	Photon flux determination of a liquid-metal jet X-ray source by means of photon scattering. Journal of Analytical Atomic Spectrometry, 2019, 34, 1497-1502.	3.0	18
14	Phase and film formation pathway for vacuum-deposited Cu2BaSn(S,Se)4 absorber layers. Physical Review Materials, 2019, 3, .	2.4	10
15	Modulation spectroscopy characterization of Cu based chalcopyrites and kesterites. , 2018, , .		0
16	Defect Annihilation by Preferential Grain Growth during Cu(In,Ga)Se<inf>2</inf> Co-evaporation. , 2018, , .		0
17	Advanced characterization and in-situ growth monitoring of Cu(In,Ga)Se2 thin films and solar cells. Solar Energy, 2018, 170, 102-112.	6.1	11
18	In-situ observations of recrystallization in CuInSe2 solar cells via STEM. Microscopy and Microanalysis, 2018, 24, 1492-1493.	0.4	4

#	ARTICLE	IF	CITATIONS
19	Lateral phase separation in Cu-In-Ga precursor and Cu(In,Ga)Se2 absorber thin films. Solar Energy Materials and Solar Cells, 2017, 162, 120-126.	6.2	10
20	Cu 2 ZnSnS 4 -based thin films and solar cells by rapid thermal annealing processing. Thin Solid Films, 2017, 628, 1-6.	1.8	45
21	Adjusting the Ga grading during fast atmospheric processing of Cu(In,Ga)Se₂ solar cell absorber layers using elemental selenium vapor. Progress in Photovoltaics: Research and Applications, 2017, 25, 341-357.	8.1	32
22	Evolution of opto-electronic properties during film formation of complex semiconductors. Scientific Reports, 2017, 7, 45463.	3.3	47
23	Chemistry and Dynamics of Ge in Kesterite: Toward Band-Gap-Graded Absorbers. Chemistry of Materials, 2017, 29, 9399-9406.	6.7	59
24	Evidence for Cu2â€“<i>x</i>Se platelets at grain boundaries and within grains in Cu(In,Ga)Se2 thin films. Applied Physics Letters, 2017, 111, .	3.3	12
25	Point defect segregation and its role in the detrimental nature of Frank partials in <mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML"><mml:mrow><mml:mrow><mml:mrow><mml:mi>Cu</mml:mi><mml:mo>(</mm thin-film absorbers. Physical Review B, 2017, 95, .	3.2	11
26	Compositional and electrical properties of line and planar defects in Cu(In,Ga)Se₂ thin films for solar cells â€“ a review. Physica Status Solidi - Rapid Research Letters, 2016, 10, 363-375.	2.4	47
27	Annihilation of structural defects in chalcogenide absorber films for high-efficiency solar cells. Energy and Environmental Science, 2016, 9, 1818-1827.	30.8	42
28	Diffusion-induced grain boundary migration as mechanism for grain growth and defect annihilation in chalcopyrite thin films. Acta Materialia, 2016, 111, 377-384.	7.9	17
29	Effect of precursor stacking order and sulfurization temperature on compositional homogeneity of CZTS thin films. Thin Solid Films, 2016, 615, 402-408.	1.8	41
30	Traceable Quantitative Raman Microscopy and X-ray Fluorescence Analysis as Nondestructive Methods for the Characterization of Cu(In,Ga)Se2 Absorber Films. Applied Spectroscopy, 2016, 70, 279-288.	2.2	6
31	Elemental redistributions at structural defects in Cu(In,Ga)Se2 thin films for solar cells. Journal of Applied Physics, 2016, 120, .	2.5	15
32	Sudden stress relaxation in compound semiconductor thin films triggered by secondary phase segregation. Physical Review B, 2015, 92, .	3.2	22
33	Effect of Na presence during CuInSe2 growth on stacking fault annihilation and electronic properties. Applied Physics Letters, 2015, 107, .	3.3	23
34	Timeâ€resolved investigation of Cu(In,Ga)Se₂ growth and Ga gradient formation during fast selenisation of metallic precursors. Progress in Photovoltaics: Research and Applications, 2015, 23, 1131-1143.	8.1	49
35	Linking Microstructure and Local Chemistry in Cu(In,Ga)Se2 Thin-Film Solar Cells. Microscopy and Microanalysis, 2015, 21, 2279-2280.	0.4	0
36	The role of interparticle heterogeneities in the selenization pathway of Cuâ€“Znâ€“Snâ€“S nanoparticle thin films: a real-time study. Journal of Materials Chemistry C, 2015, 3, 7128-7134.	5.5	21

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37	Gallium gradients in Cu(In,Ga)Se₂thin-film solar cells. Progress in Photovoltaics: Research and Applications, 2015, 23, 717-733.	8.1	122
38	A one-dimensional Fickian model to predict the Ga depth profiles in three-stage Cu(In,Ga)Se2. Journal of Applied Physics, 2014, 115, .	2.5	18
39	Real-time observation of the phase transformations and microstructural changes during the incorporation of In into a thin Cu film at 770K. Journal of Alloys and Compounds, 2014, 588, 644-647.	5.5	1
40	Phase-transition-driven growth of compound semiconductor crystals from ordered metastable nanorods. Nature Communications, 2014, 5, 3133.	12.8	98
41	Atomic-Scale STEM-EELS Characterization of the Chemistry of Structural Defects and Interfaces in Energy-Related Materials. Microscopy and Microanalysis, 2014, 20, 562-563.	0.4	0
42	CdS/Cu(In,Ga)S₂ based solar cells with efficiencies reaching 12.9% prepared by a rapid thermal process. Progress in Photovoltaics: Research and Applications, 2013, 21, 88-93.	8.1	50
43	Real-time observation of Cu2ZnSn(S,Se)4 solar cell absorber layer formation from nanoparticle precursors. Physical Chemistry Chemical Physics, 2013, 15, 18281.	2.8	86
44	Recrystallization of Cu(In,Ga)Se2 thin films studied by X-ray diffraction. Acta Materialia, 2013, 61, 4347-4353.	7.9	43
45	Real-time study of Ga diffusion processes during the formation of Cu(In,Ga)Se2: The role of Cu and Na content. Solar Energy Materials and Solar Cells, 2013, 116, 102-109.	6.2	24
46	Grazing-incidence x-ray fluorescence analysis for non-destructive determination of In and Ga depth profiles in Cu(In,Ga)Se2 absorber films. Applied Physics Letters, 2013, 103, .	3.3	15
47	Co-evaporation of Cu(In, Ga)Se<inf>2</inf> at low temperatures: An In-Situ x-ray growth analysis. , 2013, , .		3
48	Formation of CuInSe₂ and CuGaSe₂ Thinâ€Films Deposited by Threeâ€Stage Thermal Coâ€Evaporation: A Realâ€Time Xâ€Ray Diffraction and Fluorescence Study. Advanced Energy Materials, 2013, 3, 1381-1387.	19.5	37
49	The complex material properties of chalcopyrite and kesterite thinâ€film solar cell absorbers tackled by synchrotronâ€based analytics. Progress in Photovoltaics: Research and Applications, 2012, 20, 557-567.	8.1	10
50	Comprehensive Comparison of Various Techniques for the Analysis of Elemental Distributions in Thin Films. Microscopy and Microanalysis, 2011, 17, 728-751.	0.4	72
51	Exploiting the features of energy-dispersive synchrotron diffraction for advanced residual stress and texture analysis. Journal of Strain Analysis for Engineering Design, 2011, 46, 615-625.	1.8	39
52	In-situ studies of the recrystallization process of CuInS2 thin films by energy dispersive X-ray diffraction. Thin Solid Films, 2011, 519, 7193-7196.	1.8	13
53	High voltage Cu(In,Ga)S2 solar modules. Thin Solid Films, 2011, 519, 7534-7536.	1.8	10
54	Influence of precursor stacking on the absorber growth in Cu(In,Ga)S2 based solar cells prepared by a rapid thermal process. Thin Solid Films, 2011, 519, 7189-7192.	1.8	7

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55	12.6% efficient CdS/Cu(In,Ga)S2-based solar cell with an open circuit voltage of 879mV prepared by a rapid thermal process. Solar Energy Materials and Solar Cells, 2011, 95, 864-869.	6.2	84
56	Neutrons and Photons in Materials Research for Thin Film Solar Cells. Advanced Engineering Materials, 2011, 13, 737-741.	3.5	5
57	Examination of growth kinetics of copper rich Cu(In,Ga)Se2-films using synchrotron energy dispersive X-ray diffractometry. Solar Energy Materials and Solar Cells, 2011, 95, 250-253.	6.2	11
58	Photoelectric characterization of Cu(In,Ga)S2 solar cells obtained from rapid thermal processing at different temperatures. Solar Energy Materials and Solar Cells, 2011, 95, 270-273.	6.2	18
59	Development of CuInS2-based solar cells and modules. Solar Energy Materials and Solar Cells, 2011, 95, 1441-1445.	6.2	37
60	In situ analysis of elemental depth distributions in thin films by combined evaluation of synchrotron x-ray fluorescence and diffraction. Journal of Applied Physics, 2011, 109, 123515.	2.5	21
61	Fast Cu(In, Ga)Se<inf>2</inf> formation by processing Cu-In-Ga precursors in selenium atmosphere. , 2011, , .		7
62	Recrystallization of Cu-poor CuInS2 assisted by metallic Cu or Ag. Journal of Solid State Chemistry, 2010, 183, 803-806.	2.9	7
63	Recrystallization of Cuâ€“Inâ€“S thin films studied<i>in situ</i>by energy-dispersive X-ray diffraction. Journal of Applied Crystallography, 2010, 43, 1053-1061.	4.5	18
64	On the Sn loss from thin films of the material system Cuâ€“Znâ€“Snâ€“S in high vacuum. Journal of Applied Physics, 2010, 107, .	2.5	340
65	Copper Sulfide Assisted Recrystallization of Cu-poor CuInS2 Observed in-situ by Polychromatic X-ray Diffraction. Materials Research Society Symposia Proceedings, 2009, 1165, 1.	0.1	2
66	Current Transport in Cu(In,Ga)S2 Based Solar Cells with High Open Circuit Voltage - Bulk vs. Interface. Materials Research Society Symposia Proceedings, 2009, 1165, 1.	0.1	16
67	Combined analysis of spatially resolved electronic structure and composition on a crossâ€section of a thin film Cu(In_{1â€“<i>x</i>}Ga<i>_x</i>)S₂ solar cell. Physica Status Solidi (A) Applications and Materials Science, 2009, 206, 1017-1020.	1.8	24
68	Inâ€situ XRD on formation reactions of Cu₂ZnSnS₄ thin films. Physica Status Solidi C: Current Topics in Solid State Physics, 2009, 6, 1245-1248.	0.8	65
69	Texture inheritance in thin-film growth of Cu2ZnSnS4. Applied Physics Letters, 2009, 95, .	3.3	38
70	In-situ monitoring of rapid thermal processes (RTP) OF CU(IN,GA)(S,SE) 2 by optical methods. Proceedings of SPIE, 2008, , .	0.8	1
71	Sulphurisation of gallium-containing thin-film precursors analysed in-situ. Thin Solid Films, 2007, 515, 5934-5937.	1.8	26