

#### **Analysis of the edge emission of highly conductive CuGaTe<sub>2</sub>**

Krustok, Jüri; Grossberg, Maarja; Jagomägi, Andri; Danilson, Mati; Raudoja, Jaan Thin solid films 2007 / 15, p. 6192-6195  
<https://www.sciencedirect.com/science/article/abs/pii/S0040609006016117>

#### **Application of modulation spectroscopy methods in photovoltaic materials research = Modulatsioonspektroskoopia meetodite rakendamise päikeseenergeetika materjalide uurimiseks**

Raadiik, Taavi 2015 <https://digi.lib.ttu.ee/i/?2521> [https://www.ester.ee/record=b4482452\\*est](https://www.ester.ee/record=b4482452*est)

#### **Broad-band photoluminescence of donor-acceptor pairs in tetrahedrite Cu<sub>10</sub>Cd<sub>2</sub>Sb<sub>4</sub>S<sub>13</sub> microcrystals**

Krustok, Jüri; Raadiik, Taavi; Kaupmees, Reelika; Ghisani, Fairouz; Timmo, Kristi; Altosaar, Mare; Mikli, Valdek; Grossberg, Maarja Journal of physics D: applied physics 2021 / art. 105102, 7 p. : ill <https://doi.org/10.1088/1361-6463/abce29> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

#### **Characteristic low-energy Raman modes in twisted bilayer graphene**

Kahro, Tauno; Niilisk, Ahti; Rähn, Mihkel; Grossberg, Maarja; Alles, Harry TÜ ja TTÜ doktorikool "Funktsionaalsed materjalid ja tehnoloogiad" : 04.-05. märts 2014, Tartu 2014 / [1] p. : ill

#### **Characterization of tetrahedrite Cu<sub>10</sub>Cd<sub>2</sub>Sb<sub>4</sub>S<sub>13</sub> monograin materials grown in molten CdI<sub>2</sub> and LiI**

Ghisani, Fairouz; Timmo, Kristi; Altosaar, Mare; Mikli, Valdek; Pilvet, Maris; Kaupmees, Reelika; Krustok, Jüri; Grossberg, Maarja; Kauk-Kuusik, Marit Thin solid films 2021 / art. 138980 <https://doi.org/10.1016/j.tsf.2021.138980> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

#### **Chemical etching of Cu<sub>2</sub>ZnSn(S,Se)<sub>4</sub> monograin powder**

Timmo, Kristi; Altosaar, Mare; Raudoja, Jaan; Grossberg, Maarja; Danilson, Mati; Volobujeva, Olga; Mellikov, Enn 35th IEEE Photovoltaic Specialists Conference : Honolulu, HI, June 20-25, 2010 : conference proceedings 2010 / p. 1982-1985 : ill

#### **Chemical etching of tetrahedrite Cu<sub>10</sub>Cd<sub>2</sub>Sb<sub>4</sub>S<sub>13</sub> monograin powder materials for solar cell applications**

Ghisani, Fairouz; Timmo, Kristi; Altosaar, Mare; Mikli, Valdek; Danilson, Mati; Grossberg, Maarja; Kauk-Kuusik, Marit Materials science in semiconductor processing 2022 / art. 106291 <https://doi.org/10.1016/j.mssp.2021.106291> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

#### **Chemical vapour deposition of WS<sub>2</sub> monolayers [Online resource]**

Kaupmees, Reelika; Grossberg, Maarja; Krustok, Jüri Tartu Ülikooli ASTRA projekt PER ASPERA : Funktsionaalsed materjalid ja tehnoloogiad : [4.-5. veebr. 2019, Tartu : teesid] 2019 / 1 p <http://fmtdk.ut.ee/teesid-2019/>

#### **Comparison of copper zinc tin selenide formation in molten potassium iodide and sodium iodide as flux materials**

Leinemann, Inga; Raudoja, Jaan; Grossberg, Maarja; Traksmäa, Rainer; Kaljuvee, Tiit; Altosaar, Mare; Meissner, Dieter Conference proceedings of the Conference of Young Scientists on Energy Issues : Kaunas, Lithuania, 27-28 May, 2010 2011 / [8] p [https://www.researchgate.net/publication/284715158\\_COMPARISON\\_OF\\_COPPER\\_ZINC\\_TIN\\_SELENIDE\\_FORMATION\\_IN\\_MOLTEN\\_POTASSIUM\\_IODIDE\\_AND\\_SODIUM\\_IODIDE\\_AS\\_FLUX\\_MATERIALS](https://www.researchgate.net/publication/284715158_COMPARISON_OF_COPPER_ZINC_TIN_SELENIDE_FORMATION_IN_MOLTEN_POTASSIUM_IODIDE_AND_SODIUM_IODIDE_AS_FLUX_MATERIALS)

#### **Compositional dependence of Raman scattering and photoluminescence emission in Cu-Ga-Se films grown by MOCVD**

Grossberg, Maarja; Krustok, Jüri; Siebentritt, Susanne; Albert, Jürgen Physica B : condensed matter 2009 / 14/15, p. 1984-1988 : ill

#### **Compositionally tunable structure and optical properties of Cu<sub>1.85</sub>(Cd<sub>x</sub>Zn<sub>1-x</sub>)<sub>1.1</sub>SnS<sub>4.1</sub> (0 ≤ x ≤ 1) monograin powders**

Pilvet, Maris; Kauk-Kuusik, Marit; Altosaar, Mare; Grossberg, Maarja; Danilson, Mati; Timmo, Kristi; Mere, Arvo; Mikli, Valdek Thin solid films 2015 / p. 180-183 : ill <https://doi.org/10.1016/j.tsf.2014.10.091> [Conference Proceedings at Scopus](#) [Article at Scopus](#) [Conference Proceedings at WOS](#) [Article at WOS](#)

#### **CZTS monograin powders and thin films**

Mellikov, Enn; Meissner, Dieter; Altosaar, Mare; Kauk, Marit; Krustok, Jüri; Öpik, Andres; Volobujeva, Olga; Iljina, Julia; Timmo, Kristi; Klavina, J.; Raudoja, Jaan; Grossberg, Maarja; Varema, Tiit; Muska, Katri; Ganchev, Maxim; Bereznev, Sergei; Danilson, Mati Advanced materials research 2011 / p. 8-13

#### **Cu<sub>2</sub>Zn<sub>1-x</sub>CdSn(Se<sub>1-y</sub>Sy)<sub>4</sub> solid solutions as absorber materials for solar cells**

Altosaar, Mare; Raudoja, Jaan; Timmo, Kristi; Danilson, Mati; Grossberg, Maarja; Krustok, Jüri; Mellikov, Enn Physica status solidi (a) : applications and materials science 2008 / 1, p. 167-170 : ill <https://colab.ws/articles/10.1002%2Fpssa.200776839>

#### **Cu<sub>2</sub>ZnSnSe<sub>4</sub> films by selenization of Sn-Zn-Cu sequential films**

Volobujeva, Olga; Raudoja, Jaan; Mellikov, Enn; Grossberg, Maarja; Bereznev, Sergei; Traksmäa, Rainer Journal of physics and chemistry of solids 2009 / p. 567-570 : ill

#### **Cu<sub>2</sub>ZnSnSe<sub>4</sub> formation and reaction enthalpies in molten NaI starting from binary chalcogenides**

Leinemann, Inga; Zhang, Weihao; Kaljuvee, Tiit; Tõnsuaadu, Kaia; Traksmäa, Rainer; Raudoja, Jaan; Grossberg, Maarja; Altosaar, Mare; Meissner, Dieter Journal of thermal analysis and calorimetry 2014 / p. 1313-1321 : ill <https://doi.org/10.1007/s10973->

**Cu<sub>2</sub>ZnSnSe<sub>4</sub> monograin powders for solar cell application [Electronic resource]**

Altosaar, Mare; Raudoja, Jaan; Timmo, Kristi; Danilson, Mati; Grossberg, Maarja; Krunks, Malle; Varema, Tiit; Mellikov, Enn 2006 IEEE 4th World Conference on Photovoltaic Energy Conversion - WCPEC 2006 / [CD-ROM]

**Cu<sub>2</sub>(Zn<sub>x</sub>Sn<sub>2-x</sub>)(SySe<sub>1-y</sub>)<sub>4</sub> monograin materials for photovoltaics**

Mellikov, Enn; Altosaar, Mare; Raudoja, Jaan; Timmo, Kristi; Volobujeva, Olga; Kauk, Marit; Krustok, Jüri; Varema, Tiit; Grossberg, Maarja; Danilson, Mati; Muska, Katri; Ernits, Kaia; Lehner, Franz; Meissner, Dieter Materials Challenges in Alternative and Renewable Energy: a collection of papers presented at the Materials Challenges in Alternative and Renewable Energy Conference February 21-24, 2010, Cocoa Beach, Florida 2011 / p. 137-142 : ill

**Cu(In,Ga)Se<sub>2</sub> monograin powders with different Ga content for solar cells**

Timmo, Kristi; Kauk-Kuusik, Marit; Pilvet, Maris; Altosaar, Mare; Grossberg, Maarja; Danilson, Mati; Kaupmees, Reelika; Mikli, Valdek; Raudoja, Jaan; Varema, Tiit Solar energy 2018 / p. 648–655 : ill <https://doi.org/10.1016/j.solener.2018.10.078> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

**CuInSe<sub>2</sub> preparation through a new solution based selenisation process**

Kauk, Marit; Altosaar, Mare; Grossberg, Maarja; Varema, Tiit 17th International Photovoltaic Science and Engineering Conference : Fukuoka, Japan, 3-7.12.2007 2007

**Deep and edge photoluminescence emission of CuInTe<sub>2</sub>**

Jagomägi, Andri; Krustok, Jüri; Raudoja, Jaan; Grossberg, Maarja; Danilson, Mati Physica status solidi (b) 2003 / 2, p. R3-R5

**Deep defect related photoluminescence in heavily doped GaGaTe<sub>2</sub>**

Jagomägi, Andri; Krustok, Jüri; Grossberg, Maarja; Danilson, Mati; Raudoja, Jaan Physica status solidi (a) 2006 / 5, p. 949-955 : ill <http://deepzone3.ttu.ee/~juri.krustok/PDF-s/Deep%20defect%20related%20photoluminescence%20in%20heavily%20doped.pdf>

**Deep defects in Cu<sub>2</sub>ZnSnS<sub>4</sub> monograin solar cells**

Kask, Erkki; Raadik, Taavi; Grossberg, Maarja; Josepson, Raavo; Krustok, Jüri Energy procedia 2011 / p. 261-265

**Defect studies in Cu<sub>2</sub>ZnSnSe<sub>4</sub> and Cu<sub>2</sub>ZnSn(Se<sub>0.75</sub>S<sub>0.25</sub>)<sub>4</sub> by admittance and photoluminescence spectroscopy**

Kask, Erkki; Grossberg, Maarja; Josepson, Raavo; Salu, Pille; Timmo, Kristi; Krustok, Jüri Materials science in semiconductor processing 2013 / p. 992-996 : ill <https://doi.org/10.1016/j.mssp.2013.02.009> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

**Detailed insight into the CZTS/CdS interface modification by air annealing in monograin layer solar cells**

Kauk-Kuusik, Marit; Timmo, Kristi; Muska, Katri; Pilvet, Maris; Krustok, Jüri; Josepson, Raavo; Brammertz, Guy; Vermang, Bart; Danilson, Mati; Grossberg, Maarja ACS Applied Energy Materials 2021 / p. 12374–12382 <https://doi.org/10.1021/acsaem.1c02186> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

**Detailed photoluminescence study of Cu<sub>2</sub>Ge(SSe)<sub>3</sub> microcrystals**

Kuusik, Jüri; Kaupmees, Reelika; Li, Xiaofeng; Kauk-Kuusik, Marit; Grossberg, Maarja AIP advances 2021 / art. 085105 <https://doi.org/10.1063/5.0053928> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

**Device characteristics of CuInSe<sub>2</sub> based solar cells**

Krustok, Jüri; Danilson, Mati; Jagomägi, Andri; Grossberg, Maarja; Raudoja, Jaan The Fourth International Conference on Advanced Optical Materials and Devices : (AOMD-4) : Tartu, Estonia, July 6-9, 2004 : abstracts 2004 / p. 45

**Device characteristics of CuInSe<sub>2</sub> based solar cells**

Krustok, Jüri; Danilson, Mati; Jagomägi, Andri; Grossberg, Maarja; Raudoja, Jaan Proceedings of SPIE 2005 / Optical materials and applications, p. 236-242

**Effect of absorber surface modification on the optoelectronic properties of Cu<sub>2</sub>CdGeSe<sub>4</sub> solar cells**

Li, Xiaofeng; Pilvet, Maris; Timmo, Kristi; Grossberg, Maarja; Danilson, Mati; Mikli, Valdek; Kauk-Kuusik, Marit Thin solid films 2020 / art. 137822, 7 p. : ill <https://doi.org/10.1016/j.tsf.2020.137822> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

**Effect of alkali ions (Na<sup>+</sup>, K<sup>+</sup>, Cs<sup>+</sup>) on reaction mechanism of CZTS nano-particles synthesis**

Kumar, Suresh; Altosaar, Mare; Grossberg, Maarja; Mikli, Valdek Superlattices and microstructures 2018 / p. 54-63 : ill <https://doi.org/10.1016/j.spmi.2018.02.019>

**Effect of alkali ions (Na<sup>+</sup>, K<sup>+</sup>, Cs<sup>+</sup>) on reaction mechanism of CZTS nano-particles synthesis [Online resource]**

Kumar, Suresh; Altosaar, Mare; Grossberg, Maarja; Mikli, Valdek Tartu Ülikooli ASTRA projekt PER ASPERA : Funktsionaalsed materjalid ja tehnoloogiad : [7-8 märtsil 2018, Tallinn : teesid] GSFMT Scientific Conference 2018 : Tallinn, March 7-8, 2018 : abstracts 2018 / 1 p <http://fntdk.ut.ee/teesid-2018/>

### **Effect of germanium incorporation on the properties of kesterite $\text{Cu}_2\text{ZnSn}(\text{S,Se})_4$ monograins**

**Oueslati, Souhaib**; Grossberg, Maarja; **Kauk-Kuusik, Marit**; Mikli, Valdek; Ernits, Kaia; Meissner, Dieter; Krustok, Jüri Thin solid films 2019 / p. 315–320 : ill <https://doi.org/10.1016/j.tsf.2018.11.020> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

### **Effect of the substrate surface on properties of RF sputtered magnetronantimony selenide ( $\text{Sb}_2\text{Se}_3$ ) for thin-films**

**Uslu, Mehmet Ender**; Grossberg, Maarja; **Volobujeva, Olga** GSFMT Scientific Conference 2020 : Tallinn, February 4-5, 2020 : abstracts 2020 / p. 86 <http://fmdtk.ut.ee/wp-content/uploads/2020/01/GSFMT2020.pdf>

### **Formation of copper zinc tin sulfide in cadmium iodide for monograin membrane solar cells**

Nkwusi, Godswill; **Leinemann, Inga**; Grossberg, Maarja; **Kaljuvee, Tiit**; **Traksmaa, Rainer**; **Altosaar, Mare**; **Meissner, Dieter** Conference proceedings of the Conference of Young Scientists on Energy Issues : CYSENI 2012 : May 24–25, Kaunas, Lithuania 2012 / p. II 38-II 46 : ill [https://www.researchgate.net/publication/274889568\\_FORMATION\\_OF\\_COPPER\\_ZINC\\_TIN\\_SULFIDE\\_IN\\_CADMIUM\\_IODIDE\\_FOR\\_MONOGRAIN\\_MEMBRANE\\_SOLAR\\_CELLS](https://www.researchgate.net/publication/274889568_FORMATION_OF_COPPER_ZINC_TIN_SULFIDE_IN_CADMIUM_IODIDE_FOR_MONOGRAIN_MEMBRANE_SOLAR_CELLS)

### **Füüsika piire ületamas**

**Grossberg, Maarja**; **Suurvarik, Pavel** Tallinna Tehnikaülikooli aastaraamat 2007 2008 / lk. 360-361. (Konverentsimuljeid)

### **Füüsikakroonika 2006**

Kaasik, Helle; **Grossberg, Maarja** Eesti Füüsika Seltsi aastaraamat 2006 2007 / lk. 83-126 [https://artiklid.elnet.ee/record=b2401825\\*est](https://artiklid.elnet.ee/record=b2401825*est)

### **Füüsikakroonika 2007**

Kaasik, Helle; **Grossberg, Maarja** Eesti Füüsika Seltsi aastaraamat 2007 2008 / lk. 106-148

### **Füüsikakroonika 2008**

**Grossberg, Maarja** Eesti Füüsika Seltsi aastaraamat 2008 2009 / lk. 143-183

### **Growth and characterization of $\text{Cu}_2\text{Zn}_{1-x}\text{Fe}_x\text{SnS}_4$ thin films for photovoltaic applications**

Trifiletti, Vanira; Tseberlidis, Giorgio; Colombo, Mario; Spinardi, Alberto; Luong, Sally; **Danilson, Mati**; **Grossberg, Maarja**; Fenwick, Oliver; Binetti, Simona Materials 2020 / art. 1471, 13 p. : ill <https://doi.org/10.3390/ma13061471> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

### **Growth and electrical properties of ZnO nanorod arrays prepared by chemical spray pyrolysis**

**Krunk, Malle**; **Dedova, Tatjana**; Kärber, Erki; **Mikli, Valdek**; **Oja Acik, Ilona**; **Grossberg, Maarja**; **Mere, Arvo** Physica B 2009 / p. 4422-4425 : ill

### **Growth and optical properties of two-dimensional transition metal dichalcogenides = Kahedimensionaalsete siirdemetallide dikalkogeniidide kasvatus ning optiliste omaduste uurimine**

**Kaupmees, Reelika** 2021 <https://digikogu.taltech.ee/et/Item/72b400aa-c5da-4db6-8cb0-acce54153e2a>  
[https://www.ester.ee/record=b5429502\\*est](https://www.ester.ee/record=b5429502*est) <https://doi.org/10.23658/taltech.25/2021>

### **Growth of CZTS-based monograins and their application to membrane solar cells**

**Melikov, Enn**; **Altosaar, Mare**; **Kauk-Kuusik, Marit**; **Timmo, Kristi**; **Meissner, Dieter**; **Grossberg, Maarja**; **Krustok, Jüri**; **Volobujeva, Olga** Copper zinc tin sulfide-based thin film solar cells 2015 / p. 289-309 : ill

### **Growth of Cu-rich/poor $\text{CuInS}_2$ thin films by the sequential modulated flux deposition technique**

Bollero, Alberto; **Grossberg, Maarja**; **Raadik, Taavi**; Trigo, Juan Francisco; Herrero, Jose; Gutierrez, Ma Teresa Thin-film compound semiconductor photovoltaics - 2009 2009 / p. M02-06

### **High temperature properties of CdTe crystals, doped by Sb**

Fochuk, P.; Grill, R.; Nykonyuk, Y.; **Krustok, Jüri**; Armani, N.; Zakharuk, Z.; **Grossberg, Maarja**; Panchuk, O. IEEE transactions on nuclear science 2007 / 4, p. 763-768

### **Identification of excitons and biexcitons in $\text{Sb}_2\text{Se}_3$ under high photoluminescence excitation density**

**Krustok, Jüri**; Kondrotas, Rokas; Nedzinskas, Ramunas; **Timmo, Kristi**; **Kaupmees, Reelika**; **Mikli, Valdek**; **Grossberg, Maarja** Advanced optical materials 2021 / 8 p. : ill <https://doi.org/10.1002/adom.202100107> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

### **Impact of $\text{Cu}_2\text{ZnSn}(\text{SexS}_{1-x})_4$ ( $x=0.3$ ) compositional ratios on the monograin powder properties and solar cells**

**Muska, Katri**; **Kauk-Kuusik, Marit**; **Grossberg, Maarja**; **Altosaar, Mare**; **Pilvet, Maris**; **Varema, Tiit**; **Timmo, Kristi**; **Volobujeva, Olga**; **Mere, Arvo** Thin solid films 2013 / p. 35-38 : ill <https://doi.org/10.1016/j.tsf.2012.10.031> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

### **Influence of annealing conditions on the structural quality of $\text{CuInSe}_2$ thin films**

**Volobujeva, Olga; Kois, Julia; Traksmäa, Rainer; Muska, Katri; Bereznev, Sergei; Grossberg, Maarja; Mellikov, Enn** Thin solid films 2008 / 20, p. 7105-7109 : ill <https://www.sciencedirect.com/science/article/abs/pii/S0040609007020202>

**Influence of compositional deviations on the properties of Cu<sub>2</sub>ZnSnSe<sub>4</sub> monograin powders**

**Muska, Katri; Kauk, Marit; Grossberg, Maarja; Altosaar, Mare; Raudoja, Jaan; Volobujeva, Olga** Energy procedia 2011 / p. 323-327

**Influence of order-disorder in Cu<sub>2</sub>ZnSnS<sub>4</sub> powders on the performance of monograin layer solar cells**

**Timmo, Kristi; Kauk-Kuusik, Marit; Pilvet, Maris; Raadik, Taavi; Altosaar, Mare; Danilson, Mati; Grossberg, Maarja; Raudoja, Jaan; Ernits, Kaia** Thin solid films 2017 / p. 122-126 : ill <https://doi.org/10.1016/j.tsf.2016.10.017> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

**Investigation of potential and compositional fluctuations in CuGa<sub>3</sub>Se<sub>5</sub> crystals using photoluminescence spectroscopy**

**Grossberg, Maarja; Krustok, Jüri; Jagomägi, Andri; Leon, M.; Arushanov, E.; Nateprov, A.; Bodnar, I.** Thin solid films 2007 / 15, p. 6204-6207 : ill <https://www.sciencedirect.com/science/article/pii/S0040609006016221>

**Isothermal and two-temperature zone selenization of Mo layers**

**Kaupmees, Liina; Altosaar, Mare; Volobujeva, Olga; Raadik, Taavi; Grossberg, Maarja; Danilson, Mati; Mellikov, Enn; Barvinski, Paul** Advances in materials science and engineering 2012 / Article ID 345762. [11] p. : ill [https://www.researchgate.net/publication/258383467\\_Isothermal\\_and\\_Two-Temperature\\_Zone\\_Selenization\\_of\\_Mo\\_Layers](https://www.researchgate.net/publication/258383467_Isothermal_and_Two-Temperature_Zone_Selenization_of_Mo_Layers)

**Kesterite monograins for solar cells and water splitting applications**

**Oueslati, Souhaib; Pilvet, Maris; Grossberg, Maarja; Kauk-Kuusik, Marit; Krustok, Jüri; Meissner, Dieter** Thin solid films 2021 / art. 138981 <https://doi.org/10.1016/j.tsf.2021.138981> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

**Kuidas ammutada päikesest võimalikult palju elektrit?**

Käärt, Ulvar Horisont 2018 / lk. 34-38 : fot [https://www.ester.ee/record=b1072243\\*est](https://www.ester.ee/record=b1072243*est) <http://www.horisont.ee/arhiiv-2018/Horisont-5-2018.pdf> [https://artiklid.elnet.ee/record=b2865298\\*est](https://artiklid.elnet.ee/record=b2865298*est)

**Low temperature time resolved photoluminescence in ordered and disordered Cu<sub>2</sub>ZnSnS<sub>4</sub> single crystals**

**Raadik, Taavi; Krustok, Jüri; Kauk-Kuusik, Marit; Timmo, Kristi; Grossberg, Maarja; Ernits, Kaia; Bleuse, J.** Physica B : condensed matter 2017 / p. 47-50 : ill <https://doi.org/10.1016/j.physb.2016.12.011> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

**Maarja Grossberg : Eestis tehtav teadus muudab päikesepaneelid tarbijale kättesaadavamaks**

**Grossberg, Maarja** heureka.postimees.ee 2019 / fot [Maarja Grossberg: Eestis tehtav teadus muudab päikesepaneelid tarbijale kättesaadavamaks](#)

**Maarja Grossberg ja Jüri Krustok: teadus areneb alati säästlikuma ja tõhusama poole**

**Grossberg, Maarja; Krustok, Jüri** Mente et Manu 2021 / lk. 12-17 : fot [Mente et Manu 2/2021](#)

**Manganese-substituted kesterite thin-films for earth-abundant photovoltaic applications**

Trifiletti, Vanira; Frioni, Luigi; Tseberlidis, Giorgio; Vitiello, Elisa; **Danilson, Mati; Grossberg, Maarja; Acciarri, Maurizio; Binetti, Simona; Marchionna, Stefano** Solar energy materials and solar cells 2023 / art. 112247, 13 p. : ill <https://doi.org/10.1016/j.solmat.2023.112247> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

**Materjaliteadlane : tulevikus on päikesepaneelid juba ehitusmaterjalide sees [Võrguväljaanne]**

**Grossberg, Maarja** novaator.err.ee 2020 / audio [Materjaliteadlane: tulevikus on päikesepaneelid juba ehitusmaterjalide sees](#)

**Microphotoluminescence study of Cu<sub>2</sub>ZnSnS<sub>4</sub> polycrystals**

**Grossberg, Maarja; Salu, Pille; Raudoja, Jaan; Krustok, Jüri** Journal of photonics for energy 2013 / p. 030599-1 - 030599-6 : ill

**Milleks meile uued päikesepaneelitehnoloogiad?**

**Grossberg, Maarja** Sirp 2020 / lk. 33-34 : fot <https://sirp.ee/s1-artiklid/c21-teadus/milleks-meile-uued-paikesepaneelitehnoloogiad/>

**Modification of the optoelectronic properties of Cu<sub>2</sub>CdSnS<sub>4</sub> through low-temperature annealing**

**Pilvet, Maris; Kauk-Kuusik, Marit; Grossberg, Maarja; Raadik, Taavi; Mikli, Valdek; Traksmäa, Rainer; Raudoja, Jaan; Timmo, Kristi; Krustok, Jüri** Journal of alloys and compounds 2017 / p. 820-825 : ill <https://doi.org/10.1016/j.jallcom.2017.06.307> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

**Monograin layer solar cell for future lunar outpost**

**Kristmann, Katriin; Altosaar, Mare; Raudoja, Jaan; Grossberg, Maarja; Krustok, Jüri; Raadik, Taavi** IAC 2020 congress proceedings Proceedings of the International Astronautical Congress, IAC 2020 / 7 p. : ill [Monograin layer solar cell for future lunar outpost](#) <https://dl.iafastro.directory/event/IAC-2020/paper/56905/> [Conference proceeding at Scopus](#) [Article at Scopus](#)

### **Naatriumiga leegerimise mõju monoterapulbrilise CuInSe<sub>2</sub> omadustele**

**Timmo, Kristi; Altosaar, Mare; Raudoja, Jaan; Danilson, Mati; Grossberg, Maarja** XXIX Eesti keemiapäevad : teaduskonverentsi ettekannete teesid = 29th Estonian Chemistry Days : abstracts of scientific conference 2005 / lk. 111-112

### **Nano-scale sulfurization of the Cu<sub>2</sub>ZnSnSe<sub>4</sub> crystal surface for photovoltaic applications**

**Kauk-Kuusik, Marit; Li, Xiaofeng; Pilvet, Maris; Timmo, Kristi; Mikli, Valdek; Kaupmees, Reelika; Danilson, Mati; Grossberg, Maarja** Journal of materials chemistry A 2019 / p. 24884-24890 : ill <https://doi.org/10.1039/C9TA08020A> [Journal metrics at Scopus](#)  
[Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

### **Noorteadlaste ühendatud jõud - Eesti Noorte Teaduste Akadeemia**

**Grossberg, Maarja** Mente et Manu 2018 / lk. 42-43 : fot <http://dea.digar.ee/publication/AKmenteetmanu>  
[http://www.ester.ee/record=b1242496\\*est](http://www.ester.ee/record=b1242496*est) [https://artiklid.elnet.ee/record=b2862660\\*est](https://artiklid.elnet.ee/record=b2862660*est)

### **Novel Cu<sub>2</sub>CdSnS<sub>4</sub> and Cu<sub>2</sub>ZnGeSe<sub>4</sub> absorber materials for monograin layer solar cell application**

**Timmo, Kristi; Kauk-Kuusik, Marit; Altosaar, Mare; Raudoja, Jaan; Raadik, Taavi; Grossberg, Maarja; Varema, Tiit; Pilvet, Maris; Leinemann, Inga; Volobujeva, Olga; Mellikov, Enn** EU PVSEC proceedings 2013 / p. 2385-2388 : ill

### **A novel deposition method to grow ZnO nanorods : spray pyrolysis**

**Dedova, Tatjana; Krunks, Malle; Grossberg, Maarja; Volobujeva, Olga; Oja Acik, Ilona** Superlattices and microstructures 2007 / p. 444-450 : ill

### **Observation of band gap fluctuations and carrier localization in Cu<sub>2</sub>CdGeSe<sub>4</sub>**

**Krustok, Jüri; Raadik, Taavi; Kaupmees, Reelika; Grossberg, Maarja; Kauk-Kuusik, Marit; Timmo, Kristi; Mere, Arvo** Journal of physics D : applied physics 2019 / art. 285102 , 7 p. : ill <https://doi.org/10.1088/1361-6463/ab1afd> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

### **Observation of photoluminescence edge emission in CuSbSe<sub>2</sub> absorber material for photovoltaic applications**

**Penezko, Aleksei; Kauk-Kuusik, Marit; Volobujeva, Olga; Traksmäa, Rainer; Grossberg, Maarja** Applied physics letters 2019 / art. 092101, 4 p. : ill <https://doi.org/10.1063/1.5114893> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

### **Optical and structural properties of orthorhombic and tetragonal polymorphs of Cu<sub>2</sub>CdGeSe<sub>4</sub>**

**Grossberg, Maarja; Raadik, Taavi; Krustok, Jüri; Kauk-Kuusik, Marit; Timmo, Kristi; Kaupmees, Reelika; Mikli, Valdek; Mere, Arvo** Thin solid films 2018 / p. 44-47 <https://doi.org/10.1016/j.tsf.2018.09.031> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

### **Optical properties of high quality Cu<sub>2</sub>ZnSnSe<sub>4</sub> thin films**

Luckert, F.; Hamilton, D. I.; Yakushev, M. V.; Beattie, N. S.; Zoppi, G.; Moynihan, M.; Forbes, I.; Karotki, A. V.; Mudryi, A. V.; **Grossberg, Maarja; Krustok, Jüri; Martin, R. W.** Applied physics letters 2011 / p. 062104 [3 p.] : ill

### **Optical properties of multinary semiconductor compounds for photovoltaic applications = Päikesepatareides kasutatavate mitmikpooljuhtühendite optilised omadused**

**Grossberg, Maarja** 2010 <https://digi.lib.ttu.ee/i/?512> [https://www.ester.ee/record=b2637396\\*est](https://www.ester.ee/record=b2637396*est)

### **Optical spectroscopy studies of Cu<sub>2</sub>ZnSnSe<sub>4</sub> thin films**

Yakushev, M. V.; Forbes, I.; Mudryi, A. V.; **Grossberg, Maarja; Krustok, Jüri; Beattie, N. S.**; Moynihan, M.; Rockett, A.; Martin, R. W. Thin solid films 2015 / p. 154-157 : ill <https://doi.org/10.1016/j.tsf.2014.09.010> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

### **Optimizing Pt catalyst performance for oxygen reduction reaction via surface functionalization of Vulcan XC-72R carbon black support**

**Najafli, Erkin; Grossberg, Maarja; Mikli, Valdek; Walke, Peter R.; Ratso, Sander; Kruusenberg, Ivar** Journal of Applied Electrochemistry 2025 / p. 1187-1200 <https://doi.org/10.1007/s10800-024-02238-1>

### **The optoelectronic properties of Sb<sub>2</sub>(Se<sub>1-x</sub>,Sx)<sub>3</sub> (x= 0 - 1) solid solutions**

**Ender, Mehmet; Volobujeva, Olga; Timmo, Kristi; Grossberg, Maarja** GSFMT Scientific Conference 2021 : Tartu, June 14-15, 2021 : abstracts 2021 / P 4 [https://fmdk.ut.ee/wp-content/uploads/2021/06/GSFMT\\_abstractbook\\_2021.pdf](https://fmdk.ut.ee/wp-content/uploads/2021/06/GSFMT_abstractbook_2021.pdf)

### **Origin of photoluminescence from antimony selenide**

**Grossberg, Maarja; Volobujeva, Olga; Penezko, Aleksei; Kaupmees, Reelika; Raadik, Taavi; Krustok, Jüri** Journal of alloys and compounds 2020 / art. 152716, 5 p. : ill <https://doi.org/10.1016/j.jallcom.2019.152716> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

### **Photoluminescence and AFM study of WS<sub>2</sub> monolayers**

**Kaupmees, Reelika; Madauß, Lukas; Pollmann, Erik; Grossberg, Maarja; Krustok, Jüri** GSFMT Scientific Conference 2020 : Tallinn, February 4-5, 2020 : abstracts 2020 / p. 41 <http://fmdk.ut.ee/wp-content/uploads/2020/01/GSFMT2020.pdf>

### **Photoluminescence and Raman spectra of the ordered vacancy compound CuGa<sub>5</sub>Se<sub>8</sub>**

**Grossberg, Maarja; Krustok, Jüri; Bodnar, Ivan; Siebentritt, Susanne; Albert, Jürgen** Physica B 2008 / 1, p. 184-189 : ill

### **Photoluminescence and Raman spectroscopy of polycrystalline AgInTe<sub>2</sub>**

**Jagomägi, Andri; Krustok, Jüri; Raudoja, Jaan; Grossberg, Maarja; Oja, Ilona; Krunks, Malle; Danilson, Mati** Thin solid films 2005 / p. 246-249 : ill

### **Photoluminescence and Raman spectroscopy of polycrystalline AgInTe<sub>2</sub>**

**Jagomägi, Andri; Krustok, Jüri; Raudoja, Jaan; Grossberg, Maarja; Oja, Ilona; Krunks, Malle; Danilson, Mati** Thin solid films 2005 / p. 246-249 : ill

### **Photoluminescence and Raman study of Cu<sub>2</sub>ZnSn(SexS<sub>1-x</sub>)<sub>4</sub> monograins for photovoltaic applications**

**Grossberg, Maarja; Krustok, Jüri; Raudoja, Jaan; Timmo, Kristi; Altosaar, Mare; Raadik, Taavi** Thin solid films 2011 / p. 7403-7406 : ill

### **Photoluminescence properties of polycrystalline AgGaTe<sub>2</sub>**

**Krustok, Jüri; Jagomägi, Andri; Grossberg, Maarja; Raudoja, Jaan; Danilson, Mati** Solar energy materials and solar cells 2006 / 13, p. 1973-1982 : ill [https://www.researchgate.net/publication/240431559\\_Photoluminescence\\_properties\\_of\\_polycrystalline\\_AgGaTe\\_2](https://www.researchgate.net/publication/240431559_Photoluminescence_properties_of_polycrystalline_AgGaTe_2)

### **Photoluminescence study of deep donor- deep acceptor pairs in Cu<sub>2</sub>ZnSnS<sub>4</sub>**

**Krustok, Jüri; Raadik, Taavi; Grossberg, Maarja; Kauk-Kuusik, Marit; Trifiletti, V.; Binetti, S.** Materials science in semiconductor processing 2018 / p. 52-55 : ill <https://doi.org/10.1016/j.mssp.2018.02.025> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

### **Photoluminescence study of defect clusters in Cu<sub>2</sub>ZnSnS<sub>4</sub> polycrystals**

**Grossberg, Maarja; Raadik, Taavi; Raudoja, Jaan; Krustok, Jüri** Current applied physics 2014 / p. 447-450 : ill <https://doi.org/10.1016/j.cap.2013.12.029> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

### **Photoluminescence study of disordering in the cation sublattice of Cu<sub>2</sub>ZnSnS<sub>4</sub>**

**Grossberg, Maarja; Krustok, Jüri; Raadik, Taavi; Kauk-Kuusik, Marit; Raudoja, Jaan** Current applied physics 2014 / p. 1424-1427 : ill <https://doi.org/10.1016/j.cap.2014.08.013> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

### **p-n junction improvements of Cu<sub>2</sub>ZnSnS<sub>4</sub>/CdS monograin layer solar cells**

**Kauk-Kuusik, Marit; Timmo, Kristi; Danilson, Mati; Altosaar, Mare; Grossberg, Maarja; Ernits, Kaia** Applied surface science 2015 / p. 795-798 : ill <https://doi.org/10.1016/j.apsusc.2015.09.094> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

### **Post-growth annealing effect on the performance of Cu<sub>2</sub>ZnSnSe<sub>4</sub> monograin layer solar cells**

**Kauk-Kuusik, Marit; Altosaar, Mare; Muska, Katri; Pilvet, Maris; Raudoja, Jaan; Timmo, Kristi; Varema, Tiit; Grossberg, Maarja; Mellikov, Enn; Volobujeva, Olga** Thin solid films 2013 / p. 18-21 : ill <https://doi.org/10.1016/j.tsf.2012.11.075> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

### **Preparation and properties of CdTe films on Mo/glass substrates**

**Valdna, Vello; Grossberg, Maarja; Hiie, Jaan; Kallavus, Urve; Mikli, Valdek; Traksmaa, Rainer; Viljus, Mart** Thin-film compound semiconductor photovoltaics - 2009 2009 / p. M08-24 [https://www.researchgate.net/publication/231763435\\_Preparation\\_and\\_Properties\\_of\\_CdTe\\_Films\\_on\\_MoGlass\\_Substrates](https://www.researchgate.net/publication/231763435_Preparation_and_Properties_of_CdTe_Films_on_MoGlass_Substrates)

### **Properties of Cu-Sb-Se thin films deposited by magnetron co-sputtering for solar cell applications**

**Penežko, Aleksei; Kauk-Kuusik, Marit; Volobujeva, Olga; Grossberg, Maarja** Thin solid films 2021 / art. 139004 <https://doi.org/10.1016/j.tsf.2021.139004> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

### **Properties of CuSbSe<sub>2</sub> thin film solar cell absorbers deposited by magnetron co-sputtering**

**Penežko, Aleksei; Grossberg, Maarja; Volobujeva, Olga; Kauk-Kuusik, Marit** GSFMT Scientific Conference 2020 : Tallinn, February 4-5, 2020 : abstracts 2020 / p. 71 <http://fntdk.ut.ee/wp-content/uploads/2020/01/GSFMT2020.pdf>

### **Pulsed laser deposition of chalcogenide sulfides from multi- and single-component targets: the non-stoichiometric material transfer**

**Schou, Jorgen; Gansukh, Mungunshagai; Ettlinger, Rebecca B.; Cazzaniga, Andrea; Grossberg, Maarja; Kauk-Kuusik, Marit; Canulescu, Stela** Applied physics. A, Materials science & processing 2018 / Art. nr. 78 <https://doi.org/10.1007/s00339-017-1475-3> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

### **Päikeseenergeetika materjalide uuringud Eestis**

**Kauk-Kuusik, Marit; Grossberg, Maarja; Oja Acik, Ilona; Krunks, Malle** Teadusmõte Eestis (X). Tehnikateadused. 3 : [artiklikogumik] 2019 / lk. 59-65 : ill., fot [https://www.ester.ee/record=b5208765\\*est](https://www.ester.ee/record=b5208765*est)

#### **Pyrite as prospective absorber material for monograin layer solar cell**

**Kristmann, Katriin; Altosaar, Mare; Raudoja, Jaan; Krustok, Jüri; Pilvet, Maris; Mikli, Valdek; Grossberg, Maarja; Danilson, Mati; Raadik, Taavi** Thin Solid Films 2022 / art. 139068 : ill <https://doi.org/10.1016/j.tsf.2021.139068> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

#### **Pyrite as prospective monograin layer solar cell absorber material for in-situ solar cell fabrication on the Moon**

**Kristmann, Katriin; Raadik, Taavi; Altosaar, Mare; Grossberg, Maarja; Krustok, Jüri; Pilvet, Maris; Mikli, Valdek; Kauk-Kuusik, Marit** IAC 2021 congress proceedings 2021 / p. 1-6 : ill <https://deepzone3.ttu.ee/~juri.krustok/PDF-s/IAC-21.C3.4.7.x64087.pdf> [Conference Proceedings at Scopus](#) [Article at Scopus](#)

#### **Radiative recombination in Cu<sub>2</sub>ZnSnSe<sub>4</sub> monograins studied by photoluminescence spectroscopy**

**Grossberg, Maarja; Krustok, Jüri; Timmo, Kristi; Altosaar, Mare** Thin solid films 2009 / 7, p. 2489-2492 : ill <https://www.sciencedirect.com/science/article/abs/pii/S0040609008014053>

#### **Reaction enthalpies of Cu<sub>2</sub>ZnSnSe<sub>4</sub> synthesis in KI**

**Leinemann, Inga; Timmo, Kristi; Grossberg, Maarja; Kaljuvee, Tiit; Tõnsuaadu, Kaia; Traksmäa, Rainer; Altosaar, Mare; Meissner, Dieter** Journal of thermal analysis and calorimetry 2015 / p. 1555-1564 : ill <https://doi.org/10.1007/s10973-014-4339-5> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

#### **Reduced recombination through the CZTS/CdS interface engineering in monograin layer solar cells**

**Kauk-Kuusik, Marit; Timmo, Kristi; Muska, Katri; Pilvet, Maris; Krustok, Jüri; Danilson, Mati; Mikli, Valdek; Josepson, Raavo; Grossberg, Maarja** JPhys Energy 2022 / art. 024007 <https://doi.org/10.1088/2515-7655/ac618d> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

#### **Research in solar cell technologies at Tallinn University of Technology**

**Mellikov, Enn; Altosaar, Mare; Krunks, Malle; Krustok, Jüri; Varema, Tiit; Volobujeva, Olga; Grossberg, Maarja; Kaupmees, Liina; Dedova, Tatjana; Timmo, Kristi; Ernits, Kaia; Kois, Julia; Oja Acik, Ilona; Danilson, Mati; Bereznev, Sergei** Thin solid films 2008 / 20, p. 7125-7134 : ill

#### **Roheleppesega seotud väljakutsed - kas võtame need vastu?**

**Grossberg, Maarja** Mente et Manu 2020 / lk. 4-7 : fot <https://dea.digar.ee/cgi-bin/dea?a=is&oid=AKmenteetmanu202011&type=staticpdf>

#### **Routes to develop a [S]/([S]+[Se]) gradient in wide band-gap Cu<sub>2</sub>ZnGe(S,Se)<sub>4</sub> thin-film solar cells**

**Ruiz-Perona, Andrea; Gurieva, Galina; Sun, Michael; Kodalle, Tim; Sanchez, Yudania; Grossberg, Maarja; Merino, Jose Manuel; Schorr, Susan; Leon, Maximo; Caballero, Raquel** Journal of alloys and compounds 2021 / art. 159253, 9 p. : ill <https://doi.org/10.1016/j.jallcom.2021.159253> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

#### **Selenization of co-sputtered Cu-In alloy films**

**Volobujeva, Olga; Abou-Ras, Daniel; Grossberg, Maarja; Raudoja, Jaan; Mellikov, Enn; Traksmäa, Rainer** Conference records of the 33rd IEEE Photovoltaic Specialists Conference : San Diego, U.S.A., May 12-16, 2008 2008 / ? p <https://doi.org/10.1109/PVSC.2008.4922549>

#### **SEM analysis and selenization of Cu-In alloy films produced by co-sputtering of metals**

**Volobujeva, Olga; Altosaar, Mare; Raudoja, Jaan; Mellikov, Enn; Grossberg, Maarja; Kaupmees, Liina; Barvinski, Paul** Solar energy materials and solar cells 2009 / 1, p. 11-14 : ill <https://www.sciencedirect.com/science/article/pii/S0927024808000238>

#### **SEM analysis and selenization of Cu-Zn-Sn sequential films produced by evaporation of metals**

**Volobujeva, Olga; Mellikov, Enn; Raudoja, Jaan; Grossberg, Maarja; Bereznev, Sergei; Altosaar, Mare; Traksmäa, Rainer** Conference on Optoelectronic and Microelectronic Materials and Devices (COMMAD 2008) : Sydney, 18.07-1.08.2008 : proceedings 2009 / p. 257-260 <https://ieeexplore.ieee.org/document/4802140/similar#similar>

#### **Spray pyrolysis deposition and characterization of highly c-axis oriented hexagonal ZnS nanorod crystals**

**Dedova, Tatjana; Gromõko, Inga; Krunks, Malle; Mikli, Valdek; Grossberg, Maarja; Sildos, Ilmo; Utt, Kathriin; Vessart, Risto; Unt, Tarmo** Crystal research and technology 2015 / p. 85-92 : ill <https://doi.org/10.1002/crat.201400172> [Conference proceedings at Scopus](#) [Article at Scopus](#) [Conference proceedings at WOS](#) [Article at WOS](#)

#### **Structural and compositional properties of CZTS thin films formed by rapid thermal annealing of electrodeposited layers**

**Lehner, Julia; Looerts, Mihkel; Revathi, Naidu; Raadik, Taavi; Raudoja, Jaan; Grossberg, Maarja; Mellikov, Enn; Volobujeva, Olga; Ganchev, Maxim** Journal of crystal growth 2013 / p. 236-240 : ill <https://doi.org/10.1016/j.jcrysgro.2013.06.012> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

#### **Studies of novel lowcost absorbers CUSBS2 and CUSBSE2 for solar cells [Online resource]**

**Penezko, Aleksei; Grossberg, Maarja; Kauk-Kuusik, Marit** Tartu Ülikooli ASTRA projekt PER ASPERA : Funktsionaalsed materjalid ja tehnoloogiad : [4.-5. veebr. 2019, Tartu : teesid] 2019 / 1 p. : ill <http://fntdk.ut.ee/teesid-2019/>

#### **Study of (Ag<sub>x</sub>Cu<sub>1-x</sub>)<sub>2</sub>ZnSn(S,Se)<sub>4</sub> monograins synthesized by molten salt method for solar cell applications**

**Oueslati, Souhaib; Kauk-Kuusik, Marit;** Neubauer, Christian; **Mikli, Valdek; Meissner, Dieter;** Brammertz, Guy; Vermang, B.; **Krustok, Jüri; Grossberg, Maarja** Solar energy 2020 / p. 586-595 <https://doi.org/10.1016/j.solener.2020.02.002> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

**Study of CZTS nano-powder synthesis by hot injection method by variation of Cu and Zn concentrations**

**Kumar, Suresh; Kumar, Vikash; Mikli, Valdek; Varema, Tiit; Altosaar, Mare; Grossberg, Maarja** Energy procedia 2016 / p. 136-143 : ill <https://doi.org/10.1016/j.egypro.2016.11.328> [Conference Proceedings at Scopus](#) [Article at Scopus](#) [Article at WOS](#)

**Study of Cu<sub>2</sub>CdGeSe<sub>4</sub> monograin powders synthesized by molten salt method for photovoltaic applications**

**Kauk-Kuusik, Marit; Li, Xiaofeng; Pilvet, Maris; Timmo, Kristi; Grossberg, Maarja; Raadik, Taavi; Danilson, Mati; Mikli, Valdek; Altosaar, Mare; Krustok, Jüri; Raudoja, Jaan** Thin solid films 2018 / p. 15-19 <https://doi.org/10.1016/j.tsf.2018.09.025> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

**Study of point defects in wide- bandgap Cu<sub>2</sub>CdGeS<sub>4</sub> microcrystals by temperature and laser power dependent photoluminescence spectroscopy**

**Krustok, Jüri; Raadik, Taavi; Li, Xiaofeng; Kauk-Kuusik, Marit; Timmo, Kristi; Oueslati, Souhaib; Grossberg, Maarja** Journal of physics D : applied physics 2020 / 10 p. : ill <https://doi.org/10.1088/1361-6463/ab83c1> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

**Study of structural and optoelectronic properties of Cu<sub>2</sub>Zn(Sn<sub>1-x</sub>Ge<sub>x</sub>)Se<sub>4</sub> (x = 0 to 1) alloy compounds**

**Grossberg, Maarja; Timmo, Kristi; Raadik, Taavi; Kärber, Erki; Mikli, Valdek; Krustok, Jüri** Thin solid films 2015 / p. 176-179 : ill <https://doi.org/10.1016/j.tsf.2014.10.055> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

**Study of the optical properties of Sb<sub>2</sub>(Se<sub>1-x</sub>S<sub>x</sub>)<sub>3</sub> (x = 0-1) solid solutions**

**Uslu, Mehmet Ender; Kondrotas, Rokas; Nedzinskas, Ramunas; Volobujeva, Olga; Timmo, Kristi; Kauk-Kuusik, Marit; Krustok, Jüri; Grossberg, Maarja** Materials science in semiconductor processing 2022 / art. 106571 <https://doi.org/10.1016/j.mssp.2022.106571> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

**Study of the structure and optoelectronic properties of Cu<sub>2</sub>Ge(SexS<sub>1-x</sub>)<sub>3</sub> microcrystalline powders**

**Li, Xiaofeng; Timmo, Kristi; Grossberg, Maarja; Pilvet, Maris; Kaupmees, Reelika; Krustok, Jüri; Muska, Katri; Mikli, Valdek; Kauk-Kuusik, Marit** Thin solid films 2022 / art. 139053, 6 p. : ill <https://doi.org/10.1016/j.tsf.2021.139053> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

**Synthesis and characterization of tetrahedrite Cu<sub>10</sub>Cd<sub>2</sub>Sb<sub>4</sub>S<sub>13</sub> monograin material for photovoltaic application**

**Ghisani, Fairouz; Timmo, Kristi; Altosaar, Mare; Raudoja, Jaan; Mikli, Valdek; Pilvet, Maris; Kauk-Kuusik, Marit; Grossberg, Maarja** Materials science in semiconductor processing 2020 / art. 104973 <https://doi.org/10.1016/j.mssp.2020.104973> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

**Synthesis of Cu<sub>2</sub>ZnSnS<sub>4</sub> monograin powders with different compositions**

**Muska, Katri; Kauk, Marit; Altosaar, Mare; Pilvet, Maris; Grossberg, Maarja; Volobujeva, Olga** Energy procedia 2011 / p. 203-207

**Synthesis of Cu<sub>2</sub>ZnSnS<sub>4</sub> nano-powders and nano-structured thin films = Cu<sub>2</sub>ZnSnS<sub>4</sub> nano-pulbrite ja nano-struktuursete kilede süntees**

**Kumar, Suresh** 2018 <https://digi.lib.ttu.ee/i/?10626> [https://www.ester.ee/record=b5151482\\*est](https://www.ester.ee/record=b5151482*est)

**Synthesis of Cu<sub>2</sub>ZnSnS<sub>4</sub> solar cell absorber material by sol-gel method**

**Kumar, Suresh; Kasubosula, Bharath; Loorits, Mihkel; Raudoja, Jaan; Mikli, Valdek; Altosaar, Mare; Grossberg, Maarja** Energy procedia 2016 / p. 102-109 : ill <https://doi.org/10.1016/j.egypro.2016.11.324> [Conference Proceedings at Scopus](#) [Article at Scopus](#) [Article at WOS](#)

**Zinc oxide nanorods grown by spray pyrolysis**

**Krunks, Malle; Dedova, Tatjana; Mere, Arvo; Aparina, Jelena; Grossberg, Maarja** The 4th International Workshop on ZnO and Related Materials : University of Gissen, Germany, Oct.3-6, 2006 2006 / p. 170

**Zinc oxide nanostructured layers by chemical spray pyrolysis**

**Dedova, Tatjana; Aparina, Jelena; Mere, Arvo; Volobujeva, Olga; Grossberg, Maarja; Krunks, Malle** International Conference : Advances in Nanostructured Materials, Processing - Microstructure - Properties : NANOVED 2006 - NENAMAT : May 14-17, 2006, Stara Lesna, Slovak Republic : book of abstracts 2006 / p. 105

**ZnCdSeTe semiconductor compounds : preparation and properties**

**Valdna, Vello; Grossberg, Maarja; Hiie, Jaan; Kallavus, Urve; Mikli, Valdek; Raadik, Taavi; Traksmäa, Rainer; Viljus, Mart** MRS proceedings 2011 / p. u07-15 <https://www.cambridge.org/core/journals/mrs-online-proceedings-library-archive/article/abs/zncdsete-semiconductor-compounds-preparation-and-properties/49279438DA7FE99A846F54C38F77A46D>

**ZnO nanostruktuursed kihid keemilise pihustuspürolüüsi meetodil**

**Dedova, Tatjana; Annert, Katre; Volobujeva, Olga; Grossberg, Maarja; Oja Acik, Ilona; Krunks, Malle** XXXI Eesti keemiapäevad : [28. aprill 2010, Tallinn] : teaduskonverentsi teesid = 31st Estonian Chemistry Days : abstracts of scientific conference 2010 / lk. 25

#### **Taastuenergiatehnoloogiate arendamisest Eestis Euroopa rohepöörde võtmes [Võrguväljaanne]**

**Grossberg, Maarja** novaator.err.ee 2020 / fot [Riigikogus toimus konverents "Teadus kui Eesti arengumootor"](#) [Taastuenergiatehnoloogiate arendamisest Eestis Euroopa rohepöörde võtmes \(pdf\)](#)

#### **Tailoring of bound exciton photoluminescence emission in WS<sub>2</sub> monolayers**

**Kaupmees, Reelika; Grossberg, Maarja; Ney, Marcel; Krustok, Jüri** Physica status solidi - rapid research letters 2020 / art. 1900355, 6 p. : ill <https://doi.org/10.1002/pssr.201900355> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

#### **Tailoring the composition and properties of CuInSe<sub>2</sub> materials for solar cell application**

**Kauk, Marit; Altosaar, Mare; Raudoja, Jaan; Timmo, Kristi; Grossberg, Maarja; Varema, Tiit; Ernits, Kaia** Proceedings of SPIE 2005 / Optical materials and applications, p. 224

#### **Teadus teab 2021-06-08 [Võrguväljaanne]**

**Grossberg, Maarja** Kuku Taskuhääling 2021 / audio [Teadus teab 2021-06-08: Maarja Grossberg](#)

#### **Tehnikateaduste valdkonna aastapreemia tööde tsükli "Uute 2D- ja 3D-mitmikpooljuhtide optiline spektroskoopia" eest. Uute 2D- ja 3D-mitmikpooljuhtide optiline spektroskoopia**

**Grossberg, Maarja; Krustok, Jüri** Eesti Vabariigi preemiad 2021 : teadus. F. J. Wiedemanni keeleaühind. Sport. Kultuur. Haridus 2021 / lk. 94-110 : fot., ill [https://www.ester.ee/record=b1226072\\*est](https://www.ester.ee/record=b1226072*est)

#### **Temperature dependent current transport properties in Cu<sub>2</sub>ZnSnS<sub>4</sub> solar cells**

**Danilson, Mati; Kask, Erkki; Pokharel, Nikhil; Grossberg, Maarja; Kauk-Kuusik, Marit; Varema, Tiit; Krustok, Jüri** Thin solid films 2015 / p. 162-165 : ill <https://doi.org/10.1016/j.tsf.2014.10.069> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

#### **Temperature dependent electroreflectance study of Cu<sub>2</sub>ZnSnSe<sub>4</sub> solar cells**

**Krustok, Jüri; Raadik, Taavi; Grossberg, Maarja; Giraldo, Sergio; Neuschitzer, Markus; Lopez-Marino, Simon; Saucedo, Edgardo** Materials science in semiconductor processing 2015 / p. 251-254 : ill <https://doi.org/10.1016/j.mssp.2015.04.055> [Journal metrics at Scopus](#) [Article at Scopus](#) [Article at WOS](#) [Article at WOS](#)

#### **Temperature dependent optical and electrical characterization of SnS/CdS solar cell**

**Raadik, Taavi; Spalatu, Nicolae; Krustok, Jüri; Josepson, Raavo; Grossberg, Maarja** Thin Solid Films 2022 / art. 139069 <https://doi.org/10.1016/j.tsf.2021.139069> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

#### **Temperature dependent photorefectance study of Cu<sub>2</sub>SnS<sub>3</sub> thin films produced by pulsed laser deposition**

**Raadik, Taavi; Grossberg, Maarja; Krustok, Jüri; Kauk-Kuusik, Marit** Applied physics letters 2017 / p. 261105-1 - 261105-4 : ill <https://doi.org/10.1063/1.4990657> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

#### **Temperature-dependent photorefectance of SnS crystals**

**Raadik, Taavi; Grossberg, Maarja; Raudoja, Jaan; Traksmaa, Rainer; Krustok, Jüri** Journal of physics and chemistry of solids 2013 / p. 1683-1685 : ill <https://doi.org/10.1016/j.jpcs.2013.06.002> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

#### **The effect of Ag alloying of Cu<sub>2</sub>(Zn,Cd)SnS<sub>4</sub> on the monograin powder properties and solar cell performance**

**Timmo, Kristi; Altosaar, Mare; Pilvet, Maris; Mikli, Valdek; Grossberg, Maarja; Danilson, Mati; Raadik, Taavi; Josepson, Raavo; Krustok, Jüri; Kauk-Kuusik, Marit** Journal of materials chemistry A 2019 / p. 24281-24291 : ill <https://doi.org/10.1039/C9TA07768E> [TTÜ teadlased tõstsid uue põlvkonna päikesepaneelide tõhusust](#) [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

#### **The effect of elevated temperatures on excitonic emission and degradation processes of WS<sub>2</sub> monolayers**

**Kaupmees, Reelika; Walke, Peter; Madauß, Lukas; Maas, Andre; Pollmann, Erik; Schleberger, Marika; Grossberg, Maarja; Krustok, Jüri** Physical chemistry chemical physics 2020 / p. 22609-22616 <https://doi.org/10.1039/D0CP03248D> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

#### **The effect of S/Se ratio on the properties of Cu<sub>2</sub>CdGe(SxSe<sub>1-x</sub>)<sub>4</sub> microcrystalline powders for photovoltaic applications**

**Li, Xiaofeng; Pilvet, Maris; Timmo, Kristi; Grossberg, Maarja; Mikli, Valdek; Kauk-Kuusik, Marit** Solar energy 2020 / p. 646-652 : ill <https://doi.org/10.1016/j.solener.2020.09.045> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

#### **The effect of S/SE ratio on the properties of Cu<sub>2</sub>CdGe(SxSe<sub>1-x</sub>)<sub>4</sub> monograin powders for photovoltaic applications**

**Li, Xiaofeng; Kauk-Kuusik, Marit; Timmo, Kristi; Pilvet, Maris; Grossberg, Maarja; Raadik, Taavi; Danilson, Mati; Mikli,**

**The effect of sodium doping to CuInSe<sub>2</sub> monograin powder properties**

**Timmo, Kristi; Altosaar, Mare; Raudoja, Jaan; Mellikov, Enn; Varema, Tiit; Danilson, Mati; Grossberg, Maarja** Thin solid films 2007 / 15, p. 5887-5890

**The electrical and optical properties of kesterites**

**Grossberg, Maarja; Krustok, Jüri;** Hages, Charles J.; Bishop, Douglas M. Journal of Physics Energy 2019 / art. 044002, 16 p. : ill <https://doi.org/10.1088/2515-7655/ab29a0>

**The influence of doping with donor type impurities on the properties of CuInSe<sub>2</sub>**

**Kauk, Marit; Altosaar, Mare; Raudoja, Jaan; Timmo, Kristi; Varema, Tiit; Danilson, Mati; Grossberg, Maarja; Mellikov, Enn** Physica status solidi (c) 2008 / 2, p. 609-611 : ill <https://onlinelibrary.wiley.com/doi/abs/10.1002/pssc.200776831>

**The role of structural properties on deep defect states in Cu<sub>2</sub>ZnSnS<sub>4</sub> studied by photoluminescence spectroscopy**

**Grossberg, Maarja; Krustok, Jüri; Raudoja, Jaan; Raadik, Taavi** Applied physics letters 2012 / p. 102102-1 - 102102-4 : ill <https://pubs.aip.org/aip/apl/article/101/10/102102/126713/The-role-of-structural-properties-on-deep-defect>

**TTÜ aasta noorteadlane 2015 on Marja Grossberg**

**Grossberg, Maarja** Mente et Manu 2016 / lk. 22-23 : fot [http://www.ttu.ee/public/u/ulikool/Tutvustus/ajaleht-mente-et-manu/MM\\_2016\\_04/index.html](http://www.ttu.ee/public/u/ulikool/Tutvustus/ajaleht-mente-et-manu/MM_2016_04/index.html) [https://artiklid.elnet.ee/record=b2797104\\*est](https://artiklid.elnet.ee/record=b2797104*est)