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Abstract:

Thin films of Cu(InGa)(SeS)/sub 2/ have been deposited by elemental coevaporation. Characterization of the relative incorporation of S and Se in the film as a function of the S/(S+Se) content in the vapor shows that S is preferentially incorporated in a Cu-rich film, whereas Se is preferentially incorporated into a Cu-poor film. In most cases, a film with a single phase can not be deposited. Cu-rich films have a CuS layer on top of a chalcopyrite layer. Many Cu-poor films have a layered chalcopyrite structure with a composition that approximates the vapor composition on the bottom, and a composition richer in Se at the surface. Mechanisms for this vertically segregated behavior are discussed with respect to relative S and Se incorporation.

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INTRODUCTION
The addition of S or Ga to the $CuInS_2$ crystal structure provides a pathway for the growth of wider bandgap films. Films with bandgaps greater than 1.5 eV have not, as yet, matched the performance of lower bandgap cells, but may lead to improved module performance and are needed for a top cell in a multijunction cell based on this material system. The uniform addition of both Ga and S to the same film increases the range of bandgaps that can be obtained, and may provide a way of overcoming the drawbacks of using only one of them. It is important to try to understand the basic material properties of this pentenary material system as well as the thermodynamics and kinetics of phase formation under different growth conditions.

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1. W. N. Shafarman and L. Stolt, Ch. 13 in Handbook of Photovoltaic Science and Engineering, ed. by A. Luque and S. Hegedus, John Wiley & Sons, Ltd., 2003.
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2. T. Walter, M. Ruckh, K. O. Veithaus, and H. W. Schock, Proc 11 th E. C. Photovoltaic Solar Energy Conference 1992, p. 124.
Google Scholar

3. T. M. Friedlmeier and H. W. Schock, 2nd World Conference and Exhibition on Solar Energy Conversion 1998, p. 1117.
Google Scholar

4. S. Kuranouchi and T. Nakazawa, Proc 13th E. C. Photovoltaic Solar Energy Conference 1995, p. 2035.
Google Scholar

5. T. Yamaguchi, T. Naoyama, H. S. Lee, A. Yoshida, T. Kobata, S. Niiyama, and T. Nakamura, J. Phys. Chem. Solids 64, 2003, p. 1831.
Google Scholar

6. B. Eisener, D. Wolf, and G. Muller, Thin Solid Films 361-362, 2000, p. 126.
Google Scholar

7. K. Zeaiter, Y. Llinares, and C. Linares, Solar Energy Mater. and Solar Cells 61, 2000, p. 313.
Google Scholar

8. M. Gossla and W. N. Shafarman, Thin Solid Films, in press.
Google Scholar

9. L. P. Bicelli, Solar Energy Mater. 15, 1987, p. 77.

Google Scholar

10. M. Marudachalam, H. Hichri, R. Klenk, R. Birkmire, W. Shafarman, and J. Schultz, Appl. Phys. Lett. 67, 1995, p. 3978.
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