IEEE.org IEEE Xplore IEEE SA IEEE Spectrum More Sites Donate Cart Create Account Personal Sign In

Browse My Settings Help Access provided by: Sidley Austin LLP File Cabinet Sign Out

Access provided by: Sidley Austin LLP File Cabinet Sign Out

All

ADVANCED SEARCH

Conferences > Proceedings of 1994 IEEE 1st ...

Physical properties of RT-LPCVD and LPCVD polysilicon thin films: application to emitter solar cell

Publisher: IEEE

Cite This PDF

M. Lemiti ; B. Semmache ; Q.N. Le ; D. Barbier ; A. Laugier **All Authors**

2 Cites in Papers

2 Cites in Patents

178 Full Text Views

Alerts

Manage Content Alerts

Add to Citation Alerts

Abstract

Authors

References

Citations

Keywords

Metrics

More Like This

Downl PDF

Abstract:
This investigation was implemented in the framework of a novel all-low thermal budget polysilicon emitter solar cells fabrication technology. A comparative study of struc... **View more**

Metadata

Abstract:
This investigation was implemented in the framework of a novel all-low thermal budget polysilicon emitter solar cells fabrication technology. A comparative study of structural and electrical properties of thin silicon layers deposited by silane pyrolysis in a classical hot-wall furnace (LPCVD) and a cold-wall RTP reactor (RT-LPCVD) has been made. Deposition conditions and rapid thermal anneals were varied in order to improve the physical properties of RT-LPCVD polysilicon films. The structural properties have been characterized by means of grazing X-ray diffraction and cross-sectional TEM analysis. Sheet resistivity measurements performed on POCl/sub 3/-doped and subsequently rapid thermal annealed films showed the feasibility of low resistivity films particularly when the polysilicon layers are initially deposited in the amorphous state. Finally, RTCVD polysilicon emitter solar cells with various thicknesses were tested by spectral photo-response analysis.

Published in: Proceedings of 1994 IEEE 1st World Conference on Photovoltaic Energy Conversion - WCPEC (A Joint Conference of PVSC, PVSEC and PSEC)

Date of Conference: 05-09 December 1994

DOI: 10.1109/WCPEC.1994.520203

Date Added to IEEE *Xplore*: 06 August 2002

Publisher: IEEE

Print ISBN:0-7803-1460-3

Conference Location: Waikoloa, HI, USA

References is not available for this document.

Authors

References

References & Cited By

Select All

1. P. Ashburn, *IEEE. Trans. Electron Devices*, vol. ED-31, no. 7, pp. 853-859, 1984.
View Article Google Scholar

2. N. G. Tarr, "A polysilicon Emitter Solar Cell", *IEEE Electron Device Letters*, vol. EDL-6, no. 12, pp. 655-658, 1985.
View Article Google Scholar

3. J. Y. Gan, "Polysilicon emitters for silicon concentrator solar cell", *IEEE Trans. Electron Devices*, vol. ED-37, pp. 245-250, 1990.
View Article Google Scholar

4. G. Papadoulos, "Development of polysilicon emitter solar cell", *EPVSEC. Lisbon-Portugal*, pp. 27-30, 1991.
Google Scholar

5. D. Waechter, "Low-temperature crystallisation of in situ phosphorus-doped low pressure chemical vapour deposited amorphous silicon", *Can. J. Phys.*, vol. 65, pp. 1030-1032, 1987.
CrossRef Google Scholar

6. A. Kermani, "Single- wafer rapid thermal CVD technology for fabrication of MOS and bipolaire devices", *ULSI Science technology Proc.*, vol. 11, pp. 566-573, 1991.
Google Scholar

7. J. Nulman, Rapid thermal processing of thin Gate Dielectrics. Oxidation of Silicon, IEEE, vol. EDL-6, pp. 205-207, 1985.
Google Scholar

8. H. Fukuda, "Highly reliable thin nitrided SiO2 films formed by rapid thermal processing in an N2O ambient", *Jpn. J. Appl. Phys.*, vol. 29, no. 12, pp. L2333-L2336, 1990.
CrossRef Google Scholar

9. J. F Gibbons, "Limited reaction processiong: Silicon Epitaxy", *Appl. Phys. Lett.*, vol. 47, no. 7, pp. 721-723, 1985.
CrossRef Google Scholar

10. N. A. Masnari, "Single wafer process integration for submicron structures", *J. Vac. Sci. Technol.*, vol. B12, no. 14, pp. 2749-2751, 1994.
CrossRef Google Scholar

11. B. Semmache, "Radial control of the physical properties of RT-LPCVD polysilicon films deposited in a cylindrical cold wall reactor", *Eur. Mat. Res. Soc. Symp. Proc.*, vol. 37, pp. 99-107, 1993.
Google Scholar

12. J. Magarino, "Structural and electronic properties of CVD silicon", *Eur. Mat. Res. Soc. Symp. Proc.*, pp. 651-660, 1984.
CrossRef Google Scholar

13. M. C. Öztürck, "Low-pressure chemical vapor deposition of polycrystalline silicon and silicon dioxide by rapid thermal processing", *Mat. Res. Soc. Symp. Proc.*, vol. 146, pp. 109-114, 1989.
CrossRef Google Scholar

14. N. Gonon, "Optical and electrical characterization of ultra-thin oxide grown by rapid thermal processing in O2 or N2O", *Microelectron. J.*, vol. 24, pp. 401-407, 1993.
CrossRef Google Scholar

15. *Private communication*.
Google Scholar

16. B. Semmache, "Structural and electrical properties of polysilicon films deposited at 5 mbar in a RTP reactor", *Semicond. Silicon.*, pp. 311-321, 1994.
Google Scholar

17. A. J. Toprac, "Characterization of the silane surface reaction in the chemical vapor deposition of polysilicon in a cold wall rapid thermal system", *Proceeding of the 3rd Int. Symp. on process physics modeling in semiconductor*, vol. 6, pp. 337-345, 1993.
Google Scholar

18. B. Semmache, "Growth and physical properties of RT-LPCVD polysilicon", *Proceeding of the 1st Int. RTP. Conf.*, pp. 313-317, 1993.
Google Scholar

19. N. G. Tarr, "Rapid thermal annealing of polysilicon emitter solar cell", *11th E.C.P.S.E.C*, pp. 434-436, 1992.
Google Scholar

Citations

Keywords

Metrics

More Like This

The Characteristics of New n-Type Polycrystalline Silicon Thin-Film Transistors Employing Alternating Magnetic-Field-Enhanced Rapid Thermal Annealing
IEEE Electron Device Letters
Published: 2008

Rapid thermal annealing for carbon nanotube thin film transistors by a double-themral-region furnace
2016 IEEE 11th Annual International Conference on Nano/Micro Engineered and Molecular Systems (NEMS)
Published: 2016

Show More

CHANGE USERNAME/PASSWORD
PAYMENT OPTIONS
VIEW PURCHASED DOCUMENTS
COMMUNICATIONS PREFERENCES
PROFESSION AND EDUCATION
TECHNICAL INTERESTS
US & CANADA: +1 800 678 4333
WORLDWIDE: +1 732 981 0060
CONTACT & SUPPORT

About IEEE *Xplore* Contact Us Help Accessibility Terms of Use Nondiscrimination Policy IEEE Ethics Reporting Sitemap IEEE Privacy Policy

IEEE Account

» Change Username/Password

» Update Address

Purchase Details

» Payment Options

» Order History

» View Purchased Documents

Profile Information

» Communications Preferences

» Profession and Education

» Technical Interests

Need Help?

» **US & Canada:** +1 800 678 4333

» **Worldwide:** +1 732 981 0060

» Contact & Support

About IEEE *Xplore* Contact Us Help Accessibility Terms of Use Nondiscrimination Policy Sitemap Privacy & Opting Out of Cookies

A not-for-profit organization, IEEE is the world's largest technical professional organization dedicated to advancing technology for the benefit of humanity.
© Copyright 2024 IEEE - All rights reserved. Use of this web site signifies your agreement to the terms and conditions.