MRS BULLETIN

April 1998

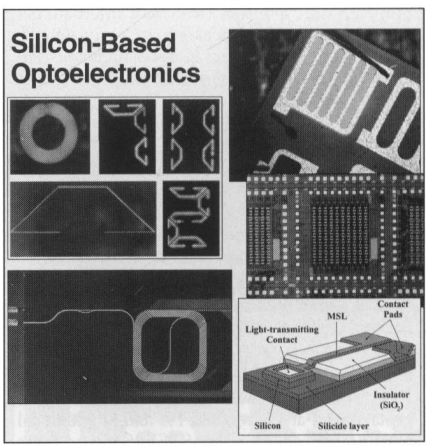
A Publication of the Materials Research Society
Volume 23, Number 4 ISSN: 0883-7694 CODEN: MRSBEA

SILICON-BASED OPTOELECTRONICS

INTERNATIONAL UNION OF MATERIALS RESEARCH SOCIETIES

ABSTRACTS

DEPARTMENTS



ON THE COVER: (Top Left) Examples of patterned structures and alphanumeric seven-segment microdisplays using LEDs based on nanocrystalline silicon-rich silicon oxide prepared by thermal oxidation of highly porous Si. For more information, see the article by L. Tsybeskov on p. 33 of this issue.

(Bottom Left) Erbium-doped aluminum oxide waveguide amplifier on a Si substrate operating at 1.54 μm, fabricated by van den Hoven et al. The waveguide spiral (area 1 mm^2) is integrated with a wavelength division multiplexer. For more information, see the article by P.G. Kik and A. Polman on p. 48 of this issue.

(Top Right) Visible light emission from a reverse-bias Er-doped Si LED due to hot-carrier optical transitions. The picture was taken using an emission microscope. For more information, see the article by S. Coffa, G. Franzò, and F. Priolo on p. 25 of this issue.

(Center Right) The hybridized Si optoelectronic reticle shown here is part of a multi-terabite-operations-per-second data processor that uses massively parallel optical interconnections between Si very large-scale-integration circuits. Distinct smart-pixel arrays appear on this wafer. Provided by A.V. Krishnamoorthy and J.E. Cunningham of Lucent Technologies. For more information, see the article by R. Soref on page 20 of this issue. See also A.V. Krishnamoorthy and K.W. Goossen, *Int. J. Optoelectronics* **11** (June 1997) p. 181.

(Bottom Right) Structure of an ultrafast metal-semiconductor-metal photodetector having an epitaxial Si sensitive layer and an epitaxial $CoSi_2$ as bottom metallization. For more information, see the article by Ch. Buchal and M. Löken on p. 55 of this issue.

https://doi.org/10.1557/S088376940003013X Published online by Cambridge University Press

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MRS Bulletin (ISSN: 0883-7694) is published 12 times a year by the Materials Research Society, 506 Keystone Drive, Warrendale, PA 15086-7573. Postage paid at Warrendale, PA and at additional mailing offices. POSTMASTER: Send address changes to *MRS Bulletin* in care of the Materials Research Society, at the address listed; phone 724-779-3003; fax 724-779-8313. Printed in the U.S.A.

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https://doi.org/10.1557/S088376940003013X Published online by Cambridge University Press

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