

2014 · VOLUME 35 · NUMBER 1

JOURNAL OF OPTICAL COMMUNICATIONS

EDITOR-IN-CHIEF:

Ralf Th. Kersten, Weimar

EDITORIAL BOARD

Ishwar Aggarwal, Washington

Rui Almeida, Washington

Markus-Christian Amann, Munich

Massimo Artiglia, Milano

John Ballato, Anderson, SC

Jaafar M. H. Elmirghani, Wales

Rainer Fechner, Nürnberg

Kazuo Hotate, Tokyo

Hiroo Kanamori, Yokohama

Kurt Lösch, Stuttgart

Bishnu P. Pal, New Delhi

Thomas Pearsall, Paris

Ning Hua Zhu, Beijing

Michel Papuchon, Guyancourt

DE GRUYTER

The publisher, together with the authors and editors, has taken great pains to ensure that all information presented in this work (programs, applications, amounts, dosages, etc.) reflects the standard of knowledge at the time of publication. Despite careful manuscript preparation and proof correction, errors can nevertheless occur. Authors, editors and publisher disclaim all responsibility for any errors or omissions or liability for the results obtained from use of the information, or parts thereof, contained in this work.

The citation of registered names, trade names, trademarks, etc. in this work does not imply, even in the absence of a specific statement, that such names are exempt from laws and regulations protecting trademarks etc. and therefore free for general use.

All information regarding notes for contributors, subscriptions, Open access, back volumes and orders is available online at www.degruyter.com/joc

ISSN 0173-4911 · e-ISSN 2191-6322

RESPONSIBLE EDITOR Prof. Dr. Ralf Th. Kersten, Haeckelstr. 2a, 99425 Weimar, Germany, Email: joc.editorial@degruyter.com

JOURNAL MANAGER Ilaria Morrone Mozzi, De Gruyter, Genthiner Straße 13, 10785 Berlin, Germany. Tel.: +49 (0)30 260 05 – 380, Fax: +49 (0)30 260 05 – 250, Email: ilaria.morronemozzi@degruyter.com

RESPONSIBLE FOR ADVERTISEMENTS Panagiota Herbrand, De Gruyter, Rosenheimer Straße 143, 81671 München, Germany, Tel.: +49 (0)89 769 02 – 394, Fax: +49 (0)89 769 02 – 350, Email: panagiota.herbrand@degruyter.com

© 2014 Walter de Gruyter GmbH, Berlin/Boston

TYPESETTING Asco Typesetters, Hongkong

PRINTING Franz X. Stücker Druck und Verlag e.K., Ettenheim
Printed in Germany



Offenlegung der Inhaber und Beteiligungsverhältnisse gem. § 7a Abs. 1 Ziff. 1, Abs. 2 Ziff. 3 des Berliner Pressegesetzes: Die Gesellschafter der Walter de Gruyter GmbH sind: Cram, Gisela, Rentnerin, Berlin; Cram, Elsbeth, Pensionärin, Rosengarten-Alvesen; Cram, Margret, Studienrätin i.R., Berlin; Cram, Dr. Georg-Martin, Unternehmens-Systemberater, Stadtbergen; Cram, Maike, Berlin; Cram, Jens, Mannheim; Cram, Ingrid, Betriebsleiterin, Tuxpan / Michoacan (Mexiko); Cram, Sabina, Mexico, DF (Mexiko); Cram, Silke, Wissenschaftlerin, Mexico DF (Mexiko); Cram, Björn, Aachen; Cram, Ella Anita, Rentnerin, Berlin; Cram, Berit, Greifswald; Cram-Gomez, Susanne, Mexico DF (Mexiko); Cram-Heydrich, Walter, Mexico DF (Mexiko); Duvenbeck, Brigitta, Oberstudienrätin i.R., Bad Homburg; Fund, Dr. Sven, geschäftsführender Gesellschafter, Berlin; Gädeke, Gudula, M.A., Atemtherapeutin/Lehrerin, Tübingen; Gädeke, Martin, Einzelunternehmer, Würzburg; Lubasch, Dr. Annette, Ärztin, Berlin; Schütz, Dr. Christa, Ärztin, Mannheim; Schütz, Sonja, Berlin; Schütz, Juliane, Berlin; Schütz, Antje, Berlin; Schütz, Valentin, Berlin; Seils, Dorothee, Apothekerin, Stuttgart; Seils, Gabriele, Journalistin, Berlin; Seils, Dr. Clara-Eugenie, Oberstudienrätin i.R., Reppenstedt; Seils, Christoph, Journalist, Berlin; Siebert, John-Walter, Pfarrer, Oberstenfeld; Walter de Gruyter Stiftung, Berlin.

Contents

Amplifiers

N. Kashima

Transmission Properties of Passive Optical Network using Hybrid Raman Amplifiers — 1

Devices

M. R. Rakhshani and M. A. Mansouri-Birjandi

Design and Simulation of Four-channel Wavelength Demultiplexer Based on Photonic Crystal Circular Ring Resonators for Optical Communications — 9

Fibers

Bishuddhananda Das, Anup Kumar Maiti and Sankar Gangopadhyay

Simple Method for Prediction of Far-Field Patterns of Single-mode Dispersion-shifted and Dispersion-flattened Fibers — 17

Networks

T. Eltaif, M. A. Alsaraj and H. A. Bakarman

In-band Bidirectional Optical Network Based on OCDMA Technique — 23

Minglei Fu, Junyang Jiang and Zichun Le

DAART: Delay-aware Adaptive Round Time MAC Protocol to Improve Throughput in Light-trail Networks — 29

N. Ahmed, S. A. Aljunid, R. B. Ahmad, Nizam Uddin Ahamed and Matiur Rahman

Performance Analysis of Hybrid OCDMA/WDM System for Metro Area Network — 39

Systems

Naresh Kumar and Harsh Sohal

Impact of Various Weather Condition on the Performance of Free Space Optical Communication System — 45

M. Selvi and K. Murugesan

Performance Comparison of OFDM based FSO Communication System under Log-normal and Gamma-Gamma Distribution — 51

Gunnar Jacobsen, Tianhua Xu, Sergei Popov and Sergey Sergeyev

Phase Noise Influence in Coherent Optical DnPSK Systems with DSP based Dispersion Compensation — 57

Laxman Tawade

10 Gbit/s Bidirectional Long Reach WDM-PON using Externally Modulated Laser for Downlink and RSOA for Uplink with Dispersion Compensating FBG — 63

Haibin Chen, Chaoqin Gan, Yan Gong and Shiqi Deng

Novel Colorless WDM-PON Featuring Optional Broadcast Service and High Reliability — 71

Theory

Kiranmay Kamila and Sankar Gangopadhyay

Laser Diode to Single-mode Circular Core Dispersion-shifted/Dispersion-flattened Fiber Excitation via Hemispherical Microlens on the Tip of the Fiber: Evaluation of Coupling Efficiency by ABCD Matrix Formalism — 77

