2015
Photonics Conference

논문 제출요령

- 홈페이지에서 on-line으로 접수
  – pdf 양식만 가능함
  – 파일이름 = 논문분야번호+한글 저자 이름+기타사항
  (예 : 2홍길동tiger.pdf)
- 논문분량 : 1 ~ 2쪽(A4 용지, 그림포함)
- 좌우여백 25mm, 상하여백 30mm
- 국문 제목(폰트크기 12), 영문 제목(12), 저자/소속(9),
  50단어 이내의 영문 Abstract(9), 본문(10)의 순서로 작성
- 발표자의 이름 뒤에 * 표시
- 심사를 통하여 우수 학생 논문을 선정합니다.
  (주저자가 학생이고 접수시에 평가대상으로 신청된
  논문중에서 채택)
  기타 자세한 사항은 website
  (http://photoconf.osk.or.kr) sample file 참조

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INTERNATIONAL YEAR OF LIGHT 2015

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2015
Photonics Conference

December 2(Wed.) ~ 4(Fri.) 2015
Phoenix Park, Pyeongchang, Korea
(강원도 평창 휘닉스 파크)

Paper submission
September 21 (Mon.) ~ November 4 (Wed.), 2015

Pre-registration
September 21 (Mon.) ~ November 16 (Mon.), 2015

Organized by

OSK / Photonics Division
KICS / Optical Communication Division
IEEK / Optical Wave and Quantum Electronics Division
KIEE / Optical Electronics and E.M.Wave Division
IEEE / PS Seoul (Korea) Chapter
SPIE / Korea Chapter

12월 4일 (금)

시간/장소	다이아몬드1 (A)	다이아몬드2 (B)	토파즈 (C)	루비 (D)	에메랄드 (E)
08:00~12:00	등 록 (로비)				
09:00~10:30	광통신 및 광네트워크Ⅳ 좌장: 윤천주(ETRI)	광소자Ⅳ 좌장: 김명기(KU-KIST)	광섬유/재료Ⅳ 좌장: 이용욱(부경대)	LED/Solar/DisplayⅣ 좌장: 신명훈(항공대)	Special Session2-실리콘포토닉스Ⅰ 좌장: 김진태(ETRI)
	F1A-Ⅰ1~5	F1B-Ⅱ1~4	F1C-Ⅳ1~6	F1D-Ⅲ1~4	F1E-Ⅸ1~3
10:30~10:45	Coffee Break				
10:45~12:15	광통신 및 광네트워크Ⅴ 좌장: 한재호(고려대)	광신호 처리Ⅲ 좌장: 최희진(세종대)	광섬유/재료Ⅴ 좌장: 김지원(한양대)	바이오포토닉스Ⅱ 좌장: 김봉규(ETRI)	Special Session2-실리콘포토닉스Ⅱ 좌장: 남동욱(인하대)
	F2A-Ⅰ1~5	F2B-Ⅴ1~6	F2C-Ⅳ1~4	F2D-Ⅵ1~4	F2E-Ⅸ1~3
12:15~12:50	폐회식 및 경품추첨 (휘닉스볼룸)				

학술발표F1E-IX 에메랄드

Special 2-실리콘포토닉스 I 09:00~10:30

09:00(초청논문)

F1E-IX-1 ■ 실리콘 포토닉스 국내외 연구 및 산업 동향 ····· 470
*이종무(ETRI)

09:30(초청논문)

F1E-IX-2 ■ 실리콘 VLSI 칩에서 하이브리드 광인터커넥트 평면 설계구조 실현을 위한 광 커플링 설계 · 471
*안동환, 배윤영(국민대)

10:00

F1E-IX-3 ■ 온-칩 광원을 위한 게르마늄 소자에 관한 연구 ····· 472
*남동욱(인하대)

학술발표F2E-IX 에메랄드

Special 2-실리콘포토닉스 II 10:45~12:15

10:45(초청논문)

F2E-IX-1 ■ 실리콘 광변조기 ····· 474
*최우영, 임진수, 유병민, 성연수, 신명진(연세대)

11:15(초청논문)

F2E-IX-2 ■ III-V/Si hybrid 레이저의 최근 연구 동향 ····· 475
*류한열(인하대)

11:45(초청논문)

F2E-IX-3 ■ 실리콘 기판에 성장한 직접 밴드갭 GeSn 합금의 광학적 특성 ····· 477
*류미이(강원대)

실리콘 광변조기

Silicon Optical Modulators

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This paper briefly reviews different types of Si optical modulators, development of which has shown very rapid progress in recent years. In addition, it introduces some of Si optical modulator modeling effects at Yonsei University for the goal of realizing high-performance Si electronic-photonic integrated circuit transmitters based on Si ring modulators.

Si photonics is attracting significant amounts of research interest as a cost-effective way of realizing optical interconnects that can overcome the interface bottleneck that present-day electrical interconnects suffer from. Since monolithic Si lasers are not available, Si optical interconnects must rely on external modulation of Si modulators whose performance greatly affects the entire system performance [1].

Electro-absorption modulators (EAMs) have been actively investigated based on III-V materials for long-distance optical communication applications. Although Si does not absorb light at 1300/1500 nm wavelength, Ge-on-Si EAMs have been successfully developed that can operate at very high speeds with small power consumption [2]. However, as of yet, the required epitaxial growth steps for Ge-on-Si EAM cannot be easily incorporated within the standard Si processing technology.

Si Mach Zehnder modulators (MZMs) can be relatively easily realized on SOI wafers with the standard Si processing technology. Modulation in Si MZM is achieved with the plasma dispersion effect caused by current injection in the forward-based PIN structure or depletion length modulation in the reverse-biased PN junction. Although the former is much more efficient, it has the intrinsic speed limitation. Consequently, most of the high-speed Si MZMs reported so far are based on the reversed-biased PN junction [3].

Si micro-ring modulators (MRMs) are another type of Si modulators that are attracting a great research efforts since they can drastically reduce the device footprint and enhance energy efficiency. However, Si MRMs are highly sensitive to temperature and wavelength and, because of this, a well-defined behaviour Si MRM is necessary[4], with which smart electronics can be used for achieving stable operation of Si MRMs. Some of these effects at Yonsei University will be presented.

참고 문헌

[1] G. T. Reed, et al., Nature Photonics (2010)
[2] M. -S. Rouifed, et al., IEEE Journal of Selected Optics in Quantum Electronics (2014)
[3] X. Tu, et al., Optics Express (2013)
[4] J. Rhim, et al., Optics Express (2015)