

Abstract Submitted  
for the OSS10 Meeting of  
The American Physical Society

**Thermal and optical characterization of photonic integrated circuits by thermoreflectance microscopy** MARYAM FARZANEH, J.A. SUMMERS, K. GREENBERG, D. LUEERSEN, RAJEEV RAM, JANICE HUDGINGS — One of the biggest challenges in operation of sub-micrometer sized optoelectronic devices is the generation of excess heat that can create hot spots and affect the device performance. In addition, size reduction and monolithic integration of a large number of optoelectronic devices on a photonic integrated circuit (PIC) restrict direct access to optical signals of each component, which renders the characterization of individual elements difficult. In this talk we report on application of the high resolution, all optical thermal imaging technique of thermoreflectance microscopy in characterization of a PIC comprised of cascaded semiconductor optical amplifiers. A combination of thermal imaging with a comprehensive heat exchange model allows us to obtain internal optical power distribution of the individual devices on a PIC under operating conditions. Other applications of the thermoreflectance technique will also be reviewed.

Maryam Farzaneh

Date submitted: 01 Apr 2010

Electronic form version 1.4