Foreword

This issue contains the Proceedings presented at INSEL96 Conference, held in Rome on November 11-12, 1996 at the Engineering Faculty, University 'La Sapienza'.

INSEL96 (Incontro Nazionale sul Silicio Emettitore di Luce) is the IV national annual meeting with the aim to share experience between researcher groups that use different approaches to obtain light emission from silicon.
This 'dream' of silicon technologists is due to the fact that an efficient and stable silicon light emitting device opens the way to monolithic optoelectronic integrated circuits, all based on silicon material. As a matter of fact some of the main building blocks for optoelectronic devices, such as waveguides and photodetectors have already been developed using silicon technology. Such possibility will reduce the price of optoelectronic circuits with respect to hybrid ones.

Research on this argument is wide spreading in the last years in the world; also the industries are focusing the problem and start to invest money and human resources on this intriguing subject.

Due to the high interest of the World Scientific Community in this field, this year invitations at INSEL96 were extended with success also to researchers of foreign countries. This idea gave more stimulating opportunities to compare works between one each other and to understand better the research trend in Europe.

Papers are divided with respect to the used approach at the same problem: applicative, on the fabrication of electroluminescent devices, photodetectors and sensors all based on silicon; theoretical, for modeling of physical phenomenon at the base of the emission mechanism. A section has been devoted to the characterization of nanostructures obtained by different technological steps from silicon wafers. Finally, erbium doped structures have been presented as precursors of light emitting devices based on silicon in the infrared range of wavelengths.

Roma, May 30, 1996 Aldo Ferrari