

Zhu Ninghua, Institute of Semiconductors, Chinese Academy of Sciences

Professor Zhu proposed a series of techniques for analysis and compensation of the parasitic parameters of laser diodes, and discovered a novel structure laser based on coupled cavities to ease the contradiction between modulation speed and output power. A novel three-dimensional optoelectronics packaging technology was proposed to cope with the electrical impedance mismatching and mode field mismatching problems existing in the packaging of photonics integrated circuits. He developed high-speed lasers with modulation bandwidths over 28 GHz and laser array modules. These techniques have been widely applied by a few world-leading optical component suppliers and equipment manufacturers, such as Accelink and Huawei.

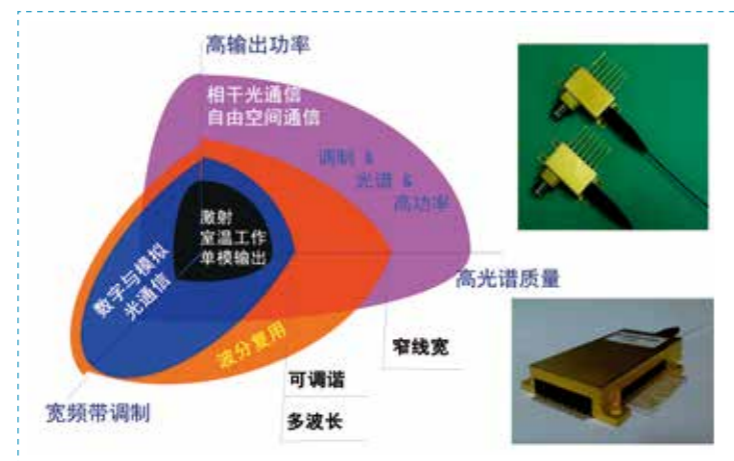
Professor Zhu is one of the outstanding representatives in the field of Optoelectronics in China. He was appointed as one of the main coordinators for making the optoelectronics development strategy plan by the Ministry of science and technology and the National Natural Science Foundation of China. He has made important contributions to the development of optoelectronic devices and its integration technology in our country.



- 研制出 28GHz 宽带窄线宽激光器，开发成功集成化多信道光模块技术：
- 国家技术发明二等奖（2013，第一），高速半导体激光器制备、测试与耦合封装技术
 - 中国通信学会科学技术一等奖（2016，第一）宽带光发射器件及集成化模块
 - 中国光学工程学会创新技术一等奖（2016，第一），宽带微波信号产生与传输的光子技术

突破了半导体激光器微波封装设计关键技术，研制出高速、多波长激光器系列产品，并应用于光通信和微波光子系统

Professor Zhu's Team has made the fundamental contributions to the key technologies of microwave packaging design and fabrication for semiconductor lasers, successfully developed high speed and laser array modules for optical communications and microwave photonics systems. The project "High speed semiconductor laser diode fabrication, testing, and microwave packaging" received the Second Grade of National Technology Invention Award of China in 2013.



祝宁华
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祝宁华

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主要科技贡献：

祝宁华研究员提出了激光器寄生参数测试分析与补偿方法，发展了集成器件三维封装技术，提出耦合腔激光器新结构，解决了激光器阻抗匹配和模场匹配等难题，缓解了高速率与高功率之间的矛盾。研制出 28GHz 超宽带半导体激光器，达到国际领先水平，打破了国际垄断；开发成功集成化多信道光模块技术，在华为和光迅等企业实现产业化应用。祝宁华研究员是我国光电子领域的杰出代表之一，被科技部和基金委指派为该领域发展战略研究的牵头人，为我国光电子器件及集成技术的发展作出了重要的贡献。

The figure includes a research paper cover titled "Directly Modulated Semiconductor Lasers" by Ning Hua Zhu et al. It features a diagram of a laser structure with labels for "内腔" (Cavity), "隔离" (Isolation), and "光栅" (Grating). A graph shows the S₂₁ (dB) response versus Frequency (GHz) for various bias currents (40mA to 90mA). A 3D model shows the "DML chip" mounted on a package with a "Series resistor" and "Solder". A photograph shows the physical laser chip.

提出了耦合腔激光器新结构，发展了集成器件三维封装方法，解决了激光器阻抗匹配和模场匹配等难题，研制出 28GHz 超宽带半导体激光器

Professor Zhu's Team proposed a novel laser structure with coupled cavities and developed a three-dimensional packaging technique to significantly eliminate the effects of electrical impedance mismatching and mode field mismatching problems for the packaging of photonic integrated circuits. A high-speed directly modulated laser with a modulation bandwidth over 28 GHz was successfully developed.