



杨林



杨林，博士，研究员，博士生导师。2003年6月毕业于中国科学院半导体研究所集成光电子学国家联合重点实验室，获微电子学与固体电子学博士学位。2003年8月赴日本北海道大学集成量子电子学中心留学，历任研究机关研究员和日本学术振兴会研究员。2007年9月入选中国科学院“百人计划”，2012年中国科学院“百人计划”终期评估被评为“优秀”，现为中国科学院半导体研究所集成光电子学国家联合重点实验室研究员。

围绕光互连、光计算与光通信的应用需求，系统开展硅基片上集成光子器件与系统的研究，取得多项有价值的研究成果：率先在国际上提出了硅基集成光学矩阵处理器的概念，提出了多个硅基集成光学矩阵处理器的拓扑结构，采用波分复用技术和波长可寻址调制器矩阵，有效解决了光学矩阵处理器在片上集成时光学交叉过多的问题，提高了系统的扩展性，并首先实现了器件的原理验证，计算速度为8000万乘加运算/秒；提出了N端口片上光学路由器的普适拓扑结构，首次实现了5端口片上光学路由器，数据吞吐量为500Gb/s；研制出了调制速率为40Gb/s的硅基Mach-Zehnder光调制器，在消光比为4.7dB的情况下（最高可达15dB），功耗为32fJ/bit；首次提出并实现了基于硅微环光开关的非、与/与非、或/或非、同或/异或、编码、译码、半加光学导向逻辑器件。

主持和承担了中科院“百人计划”项目、国家自然科学基金重点项目、国家创新研究重大项目、国家创新基金重点项目、国家“863”重大项目、国家“863”重点项目、中科院科技创新“交叉与合作团队”项目等二十余项。获授权中国发明专利15项，申请中国发明专利20余项。累计发表SCI收录论文50余篇，其中在本领域顶级学术期刊Laser Photonics Review、Optics Express、Optics Letters、Applied Physics Letters上发表论文20余篇。在国际重要学术会议上作邀请报告十余次。

已毕业博士研究生3名（另有3名联合培养），硕士研究生2名，毕业研究生中获“中科院院长优秀奖”3人次。

研究组主页地址：<http://oip.semi.cas.cn/>

目前主要研究兴趣

1、芯片间和芯片上光互连与光交换技术的研究，包括：片上光互连网络架构、光学路由器、光调制器、复用/解复用器；

2、光纤通信网络用硅基光子器件的研究，包括：基于高级调制格式的光调

制器、宽带可调谐光学滤波器、可重构光学上下路分插复用器；

3、用于海量数据处理的硅基集成光学矩阵处理器的研究；

4、用于高通量数据处理的硅基片上集成可编程光学逻辑回路的研究。

计划每年招收研究生1~3名，欢迎物理、光电子、电子工程等专业的学生报考，办公室：1-607A，Email: lyang@semi.ac.cn；电话：010-82304044/4912。

主要学术论文

1. Y. H. Tian, L. Zhang, Q. F. Xu, and L. Yang,* "XOR/XNOR directed logic circuit based on coupled-resonator-induced transparency," *Laser & Photonics Reviews*, 7(1), 109-113, 2013.

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5. J. F. Ding, H. T. Chen, L. Yang,* L. Zhang, R. Q. Ji, Y. H. Tian, W. W. Zhu, Y. Y. Lu, P. Zhou, R. Min, M. B. Yu, "Ultra-low-power carrier-depletion Mach-Zehnder silicon optical modulator," *Optics Express*, 20(7), 7081-7087, 2012.

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关于 我们

1956年，在我国十二年科学技术发展远景规划中，半导体科学技术被列为当时国家新技术四大紧急措施之一。为了创建中国半导体科学技术的研究发展基地，国家于1960年9月6日在北京成立中国科学院半导体研究所开启了我国半导体科学技术的发展之路。

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