



Silicon Photonics: Industrial Applied Materials and Technologies

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Message from the Guest Editor

Silicon photonics is among the top ten emerging technologies in microelectronics and is forecast by the MIT Communications Technology Roadmap to develop into a \$20B annual market. Silicon photonics represents a technology which on the one hand builds on the well-developed methods of CMOS-compatible fabrication and yet, on the other, is potentially disruptive in its promise to revolutionize high-performance computing and sensing. Practical implementation in commercial devices will require low loss waveguides, polarization handling, tunability, and hitless switching. Fundamental and applied advances have been made in areas such as silicon waveguides, optical sources, optical modulators, photodetectors, and integration. These advances rest upon myriad solutions to problems such as growth, etching and bonding of a variety of materials including not only Si and SiO₂ but also III-V semiconductors, lithium niobate, transparent conductive oxides or even graphene.





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Message from the Editor-in-Chief

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