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Erbium silicate compound optical waveguide amplifier and laser

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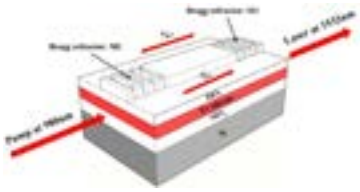
In the process of information technology, as Moore's law becomes more and more close to the limit, it has become inevitable and the consensus to combine microelectronics and optoelectronics to develop silicon-based large-scale optoelectronic integration technology. As the most important part of silicon photonic devices, silicon-based light source still attracted great efforts. In the traditional research, the erbium-doped materials have played an important role in silicon-based light sources. Recent studies demonstrated that the erbium silicate compound had a high net gain attributable to its high erbium concentration that has no insolubility problem. This paper focuses on the theory, designs, simulations, preparation methods, process and device optimizations of the erbium silicate compound optical waveguide amplifier and laser. The erbium silicate compound materials with large optical gains can serve as potential candidates for future silicon-based scale-integrated light-source applications.



Biography

Xingjun Wang received the BE, ME and PhD degrees from the Dalian University of Technology, China in 1999, 2002 and 2005 respectively. From 2007 to 2009 he was a JSPS Postdoctoral Fellow in the Department of Electronic Engineering, University of Electro-Communications, Japan. In 2009, he joined Peking University and is currently a Full Professor at Peking University, Beijing, China. In 2015, he was selected first Young Yangtse Rive Scholar of China. Now he is devoted into Si photonics, including the Si-based light source and Si optoelectronic integration chip for high-speed optical communication. He has published more than 150 papers on international journals and conference proceedings. The 80 papers have been SCI indexed. The citation reaches 800 times.

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