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## Spatial-mode multiplexer/demultiplexer based on tapered hollow waveguide with lateral optical confinement

By: [Yamakawa, H](#) (Yamakawa, Hideaki)<sup>[1]</sup>; [Sakaguchi, T](#) (Sakaguchi, Takahiro)<sup>[1]</sup>; [Ahmed, M](#) (Ahmed, Moustafa)<sup>[2]</sup>; [Bakry, A](#) (Bakry, Ahmed)<sup>[2]</sup>; [Koyama, F](#) (Koyama, Fumio)<sup>[1,2]</sup>  
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### Abstract

We propose and demonstrate a spatial-mode multi/demultiplexer based on a tapered hollow waveguide with lateral optical confinement. The fabricated device shows vertical radiation spots for different transverse-modes traveling along a tapered hollow waveguide. Both multiplexing and demultiplexing functions are presented, exhibiting a potential of spatial-mode multiplexing/demultiplexing hollow waveguide devices in compact fashion. (C) 2015 The Japan Society of Applied Physics

### Author Information

Reprint Address: Yamakawa, H (reprint author)

+ Tokyo Inst Technol, Photon Integrat Syst Res Ctr, Precis & Intelligence Lab, Yokohama, Kanagawa 2268503, Japan.

#### Addresses:

+ [1] Tokyo Inst Technol, Photon Integrat Syst Res Ctr, Precis & Intelligence Lab, Yokohama, Kanagawa 2268503, Japan

+ [2] King Abdulaziz Univ, Dept Phys, Fac Sci, Jeddah 21589, Saudi Arabia

E-mail Addresses: [koyama@pi.titech.ac.jp](mailto:koyama@pi.titech.ac.jp)

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