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Makoto Aoki, Norihisa Hiromoto

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Title:

Condensing efficiency of the truncated cone condenser and its comparison with the Winston cone condenser in terahertz region.

Authors:

Makoto Aoki* and Norihisa Hiromoto (Corresponding author)^{a)}

Affiliations:

Graduate School of Engineering, Shizuoka Univ., 3-5-1 Johoku, Naka-ku, Hamamatsu 432-8011, Japan

*Present address is National Institute of Information and Communications Technology (NICT), 4-2-1 Nukui-Kitamachi, Koganei, Tokyo, 184-8795, Japan

E-mail:

a) dnhirom@ipc.shizuoka.ac.jp

Telephone/fax number:

+81-53-478-1351

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terahertz, truncated cone condenser, Winston cone condenser, ray-tracing, electromagnetic field analysis

Abstract:

The angle-dependent condensing efficiency of a truncated cone condenser (TCC) in the terahertz (THz) region has been examined by 2D ray tracing and 3D electromagnetic simulation. The condensing efficiency in the THz region is transferred to that in the optical region by theoretical dispersive reflection from a rough surface, and it is confirmed that the latter is consistent with the measured condensing efficiency in the optical region. Although the TCC has a gradual field of view (FOV) compared with the Winston cone condenser (WCC), we improved the steepness of the FOV by adding a baffle before the input aperture of the TCC. We also proved that the TCC has a high condensing efficiency at around normal incidence in comparison with the WCC in the THz region.

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