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(74) Agent: **KOBA, Wendy, W.**; PO Box 556, Springtown, PA 18081 (US).

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(71) Applicant (*for all designated States except US*):
LIGHTWIRE, INC. [US/US]; 7540 Windsor Drive, Suite 412, Allentown, PA 18195 (US).

(72) Inventors; and

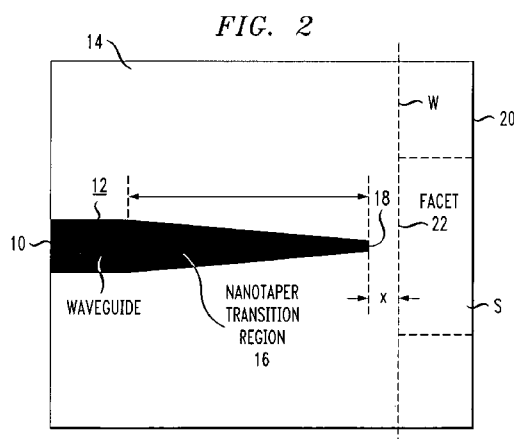
(75) Inventors/Applicants (*for US only*): **WEBSTER, Mark** [AU/US]; 10 W. Market Street, 2nd. Floor, Bethlehem, PA 18018 (US). **PATEL, Vipulkumar** [US/US]; 8916 Grady Drive, Breinigsville, PA 18031 (US). **NADEAU, Mary** [US/US]; 994 Tower Road, Alburtis, PA 18011 (US). **GOTHOSKAR, Prakash** [IN/US]; 6749 Windermere Court, Allentown, PA 18104 (US). **PIEDE, David** [US/US]; 11 Jade Lane, Allentown, PA 18104 (US).

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(54) Title: COUPLING BETWEEN FREE SPACE AND OPTICAL WAVEGUIDE USING ETCHED COUPLING SURFACES



(57) Abstract: A plasma-based etching process is used to specifically shape the endface of an optical substrate supporting an optical waveguide into a contoured facet which will improve coupling efficiency between the waveguide and a free space optical signal. The ability to use standard photolithographic techniques to pattern and etch the optical endface facet allows for virtually any desired facet geometry to be formed - and replicated across the surface of a wafer for the entire group of assemblies being fabricated. A lens may be etched into the endface using a properly-defined photolithographic mask, with the focal point of the lens selected with respect to the parameters of the optical waveguide and the propagating free space signal. Alternatively, an angled facet may be formed along the endface, with the angle sufficient to re-direct reflected/scattered signals away from the optical axis.

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