Fiber optic array fabrication under a microscope

Overview

In this work, we demonstrate the fabrication of semi-cylindrical channels on glass substrates using femtosecond laser micromachining for fiber arrays edge couplers. Optical fiber arrays provide a powerful substrate for creating high-density sensing systems that can address a variety of biological problems. This method enables the formation of narrow, well-defined grooves in glass. Fiber optics coupled to components such as lenses and mirrors have seen extensive use as probes for Raman and fluorescence measurements. Probes can be placed directly on or into a sample to allow for simplified and remote application of these optical techniques. The printed microlenses can focus or collimate the light from. A fiber array unit (FAU) includes a substrate, a cover element, and a plurality of optical fibers each including a splice joint connecting fibers of different mode-field diameters with a recoating material arranged over at least a portion of the fibers overlapping the substrate, wherein stripped. For cleaning and polishing acrylic fibers, the recommended tool to use is a plastic nail buff. A digital scale (accurate to ±0.

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A fiber optic array (FOA) can be used as an alternative or a supplement to the lens in a microscope due to its large magnification, high coupling efficiency and extremely low distortion.

In this paper, we present the fiber feed design and fabrication recipe of our prototype. We also outline our optical test procedures and report results on surface flatness of our fibers.

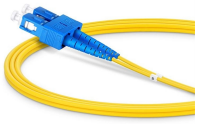
Based on the research, this paper presents the performance comparison between the FOA and the lens-based microscope and then demonstrates a proof-of-concept study of the FOA as ...

This structure enables each well to be addressed by the optical fiber defining its base, providing a high-density array of microwells that can be simultaneously and individually interrogated by light.

The disclosure relates generally to fiber array units that facilitate connection of optical fibers to optical waveguide devices, and specifically to fiber array units providing...

Fiber arrays are commonly used as edge couplers for PICs. In this work, we demonstrate the fabrication of semi-cylindrical channels on glass substrates using femtosecond laser ...

They are intended for free space coupling to other fiber arrays, photonic integrated circuits (PICs), or other components. The printed microlenses can focus or collimate the light from the fibers, enabling ...



The fiber after the cladding is removed, is shown in the microscope picture to the right. (Note: don''t worry about scratching the inner fiber; it will all be polished away anyway.)

Our goal was to design a free-standing probe with integrated optics that could focus and collect light from outside the probe, be easily coupled to fiber optics, and have separate input (e.g. excitation) ...

This letter experimentally demonstrated a method to improve the resolution of compact microscope by employing the microsphere, in combination with the tube lens placed on the small-end ...

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