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Astratov

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(54) **CONTACT FOCUSING HOLLOW-CORE FIBER MICROPROBES**

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(58) **Field of Classification Search**

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See application file for complete search history.

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(57) **ABSTRACT**

A focusing microprobe system, comprising: one of a single-mode laser radiation source and a few-mode laser radiation source; a coupler coupled to the laser radiation source; one of a single-mode flexible laser radiation delivery system and a few-mode flexible laser radiation delivery system coupled to the coupler; and one or more focusing microlenses coupled to the flexible laser radiation delivery system and arranged in a focusing tip. The coupler comprises a focusing lens. The flexible laser radiation delivery system comprises one of a hollow-core fiber and a flexible waveguide. Optionally, the one or more focusing microlenses are bonded to seal a hollow internal cavity of the flexible laser radiation delivery system. The one or more focusing microlenses comprise one or more conventional lenses or one or more focusing spheres, hemispheres, or cylinders.

19 Claims, 3 Drawing Sheets

