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Bomszyk et al.

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(54) **ULTRASOUND SYSTEM FOR SHEARING CELLULAR MATERIAL IN A MICROPLATE**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 291 days.

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(57) **ABSTRACT**

Disclosed embodiments include illustrative piezoelectric element array assemblies, methods of fabricating a piezoelectric element array assembly, and systems and methods for shearing cellular material. Given by way of non-limiting example, an illustrative piezoelectric element array assembly includes at least one piezoelectric element configured to produce ultrasound energy responsive to amplified driving pulses. A lens layer is bonded to the at least one piezoelectric element. The lens layer has a plurality of lenses formed therein that are configured to focus ultrasound energy created by single ones of the at least one piezoelectric element into a plurality of wells of a microplate disposable in ultrasonic communication with the lens layer, wherein more than one of the plurality of lenses overlie single ones of the at least one piezoelectric element.

12 Claims, 17 Drawing Sheets

