

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property  
Organization  
International Bureau

(43) International Publication Date  
10 October 2024 (10.10.2024)



(10) International Publication Number  
**WO 2024/211441 A1**

(51) International Patent Classification:

A61N 7/00 (2006.01) A61B 5/00 (2006.01)  
A61B 18/00 (2006.01)

(21) International Application Number:

PCT/US2024/022877

(22) International Filing Date:

03 April 2024 (03.04.2024)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

|            |                            |    |
|------------|----------------------------|----|
| 63/493,886 | 03 April 2023 (03.04.2023) | US |
| 63/493,889 | 03 April 2023 (03.04.2023) | US |
| 63/493,891 | 03 April 2023 (03.04.2023) | US |

(71) Applicant: **THE REGENTS OF THE UNIVERSITY OF MICHIGAN** [US/US]; 1600 Huron Parkway, 2nd Floor, Office of Technology Transfer, Ann Arbor, Michigan 48109 (US).

(72) Inventors: **XU, Zhen**; 1600 Huron Parkway, 2nd Floor, Office of Technology Transfer, Ann Arbor, Michigan 48109 (US). **SUKOVICH, Jonathan R.**; 1600 Huron Parkway, 2nd Floor, Office of Technology Transfer, Ann Arbor, Michigan 48109 (US). **HALL, Timothy L.**; 1600 Huron Parkway, 2nd Floor, Office of Technology Transfer, Ann Arbor, Michigan 48109 (US). **HASKELL, Scott**; 1600 Huron Parkway, 2nd Floor, Office of Technology Transfer, Ann Arbor, Michigan 48109 (US).

(74) Agent: **THOMAS, Justin**; Shay Glenn LLP, 155 Bovet Road, Suite 710, San Mateo, California 94402 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CV, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IQ, IR, IS, IT, JM, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, MG, MK, MN, MU, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, WS, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, CV, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SC, SD, SL, ST,

SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, ME, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Published:

- with international search report (Art. 21(3))
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))

(54) Title: REAL-TIME MONITORING OF HISTOTRIPSY DOSE DELIVERY DAMAGE SPATIALLY AND TEMPORALLY

(57) Abstract: A histotripsy therapy system configured for the treatment of tissue is provided, which may include any number of features. Provided herein are systems and methods that provide efficacious non-invasive and minimally invasive therapeutic, diagnostic and research procedures. Systems and methods are provided which facilitate real-time monitoring of dose delivered and tissue ablation. The techniques can include monitoring received acoustic cavitation emission signals or using dMRI.

WO 2024/211441 A1