

PNNL-32824

Mesofluidic Inline Separation for Produced Water Treatment

CRADA 537 (PNNL 77883)

January 2022

Leonard F Pease Michael J Minette

University of Akron Raytheon Technologies Corporation



Prepared for the U.S. Department of Energy under Contract DE-AC05-76RL01830

DISCLAIMER

This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor Battelle Memorial Institute, nor any of their employees, makes **any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof, or Battelle Memorial Institute. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.**

PACIFIC NORTHWEST NATIONAL LABORATORY operated by BATTELLE for the UNITED STATES DEPARTMENT OF ENERGY under Contract DE-AC05-76RL01830

Printed in the United States of America

Available to DOE and DOE contractors from the Office of Scientific and Technical Information, P.O. Box 62, Oak Ridge, TN 37831-0062; ph: (865) 576-8401 fax: (865) 576-5728 email: <u>reports@adonis.osti.gov</u>

Available to the public from the National Technical Information Service 5301 Shawnee Rd., Alexandria, VA 22312 ph: (800) 553-NTIS (6847) email: orders@ntis.gov <<u>https://www.ntis.gov/about</u>> Online ordering: <u>http://www.ntis.gov</u>

Mesofluidic Inline Separation for Produced Water Treatment

CRADA 537 (PNNL 77883)

Abstract

January 2022

Leonard F Pease Michael J Minette

Prepared for the U.S. Department of Energy under Contract DE-AC05-76RL01830

Pacific Northwest National Laboratory Richland, Washington 99354

Abstract

The mesofluidic inline separation developed by PNNL represents an opportunity to remove a key barrier in the treatment of produced water: suspended solids that clog downstream operations to remove dissolved solids. The US alone produces over a trillion gallons of produced water each year, most of which is reinjected as a waste product. The impact from treating and reusing even a fraction of this water is immense as aquifers in the Midwest and elsewhere are drying.

Pacific Northwest National Laboratory

902 Battelle Boulevard P.O. Box 999 Richland, WA 99354 1-888-375-PNNL (7665)

www.pnnl.gov