ADAPTIVE MACHINE LEARNING-BASED
CONTROL FOR PERSONALIZED PLASMA
MEDICINE

Tech ID: 33092 / UC Case 2023-106-0

PATENT STATUS

Patent Pending

BRIEF DESCRIPTION

Plasma medicine has emerged as a promising approach for treatment of biofilm-related and
virus infections, assistance in cancer treatment, and treatment of wounds and skin
diseases. However, an important challenge arises with the need to adapt control policies,
often only determined after each treatment and using limited observations of therapeutic
effects. Control policy adaptation that accounts for the variable characteristics of plasma
and of target surfaces across different subjects and treatment scenarios is needed.
Personalized, point-of-care plasma medicine can only advance efficaciously with new
control policy strategies.

To address this opportunity, UC Berkeley researchers have developed a novel control
scheme for tailored and personalized plasma treatment of surfaces. The approach draws
from concepts in deep learning, Bayesian optimization and embedded control. The
approach has been demonstrated in experiments on a cold atmospheric plasma jet, with
prototypical applications in plasma medicine.

SUGGESTED USES

» Low-temperature plasma treatment of complex surfaces
» Materials processing, plasma medicine, and possibly semiconductor manufacturing

ADVANTAGES

» Data-efficient, personalized plasma control
» Experimentally demonstrated on cold plasma jet

RELATED MATERIALS

» Biotechnology
» Health
» Other
» Medical
» Disease: Autoimmune and Inflammation
» Disease: Dermatology
» Disease: Infectious Diseases
» Therapeutics
» Research Tools
» Other
» Semiconductors
» Processing and Production

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