ADAPTIVE MACHINE LEARNING-BASED CONTROL FOR PERSONALIZED PLASMA MEDICINE

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PATENT STATUS

Country	Type	Number	Dated	Case
Patent Cooperation Treaty	Published Application	WO 2024-215848	10/17/2024	2023-106

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

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INVENTORS

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OTHER INFORMATION

CATEGORIZED AS

» **Biotechnology**

» Health

» Other

» **Medical**

» Disease: Autoimmune and Inflammation

» Disease: Dermatology

» Disease: Infectious Diseases

» Therapeutics

» **Research Tools**

» Other

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» Processing and Production

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