

FLEXIBLE HYDRAULIC ACTUATOR BASED ON ELECTROOSMOTIC PUMP

Tech ID: 33889 / UC Case 2025-081-0

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INVENTORS

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OTHER INFORMATION

CATEGORIZED AS

- » **Materials & Chemicals**
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PATENT STATUS

Patent Pending

BRIEF DESCRIPTION

Traditional hydraulic actuators can be rigid, bulky, and difficult to integrate into flexible or small-scale applications, limiting their use in emerging fields like soft robotics and haptic feedback. This innovation, developed by UC Berkeley researchers, is a Flexible Hydraulic Actuator Based on Electroosmotic Pump. It addresses this limitation with a compact, flexible design that uses an electroosmotic pump (EOP) to achieve controlled shape changes. This unique structure allows the actuator to be configured to change its shape, color, and optical characteristics with low power consumption, offering a distinct advantage in flexibility and miniaturization over conventional actuators.

SUGGESTED USES

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Wearable devices for controlled haptic feedback or adaptive shaping.

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Robotic devices, particularly soft robotics, requiring flexible and precise actuation.

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Components for devices that require changeable optical characteristics or color modification.

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Actuators in haptic devices for creating tactile sensations.

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Integration into active camouflage or materials that dynamically change their appearance.

ADVANTAGES

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High flexibility and ability to change shape, making it ideal for non-rigid applications.

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Miniaturized design compared to traditional hydraulic actuators, enabling integration into small-scale devices.

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Low power consumption due to the electroosmotic pumping mechanism.

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Can be configured to alter color and optical characteristics, providing multi-functional capability.

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The use of flexible components (EOP layer, electrodes, elastic shells) enhances durability and adaptability.

RELATED MATERIALS



