

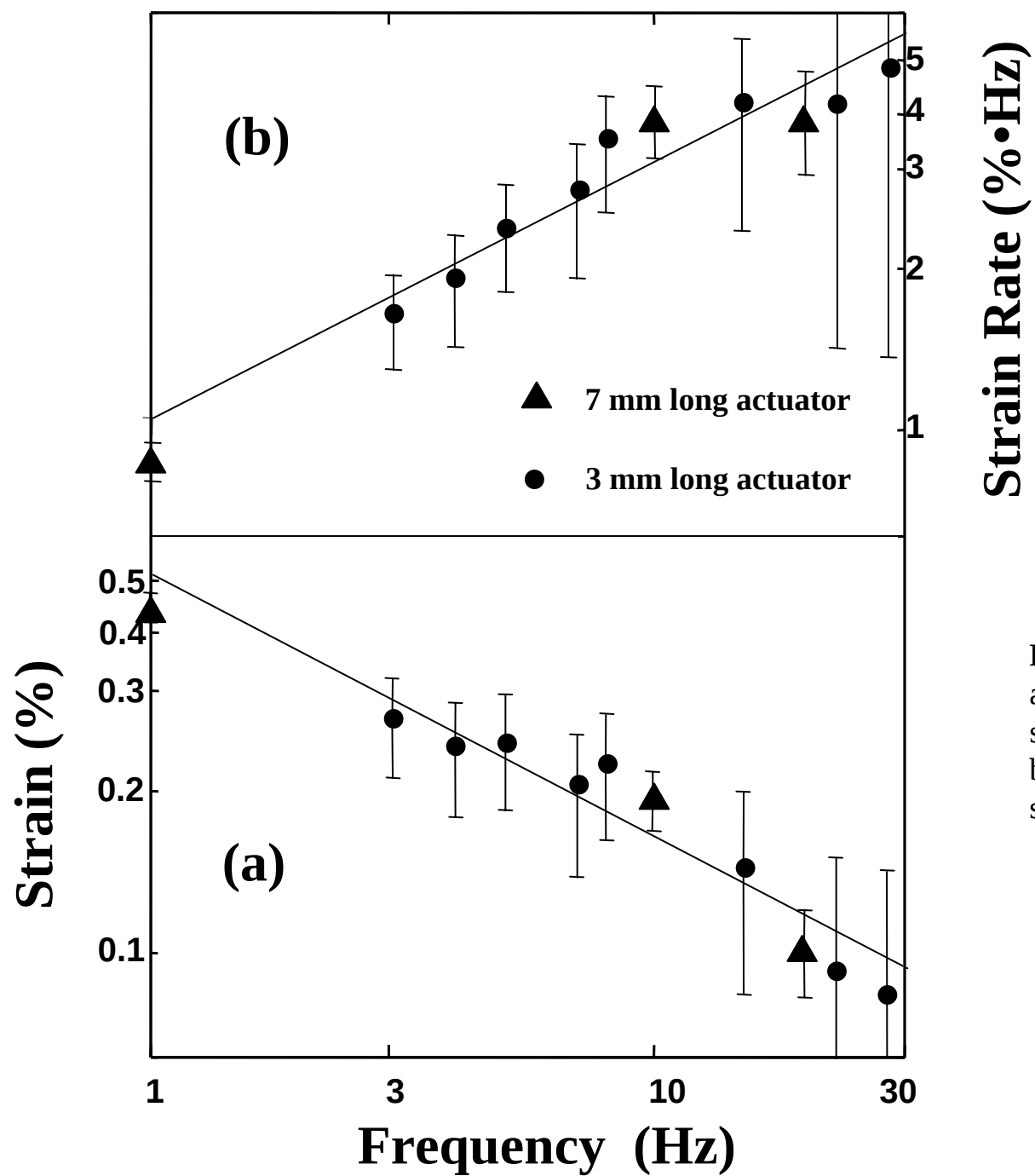


Figure 1: Strain and strain rate as a function of frequency of square wave activation for bilayer actuators in aqueous solution.

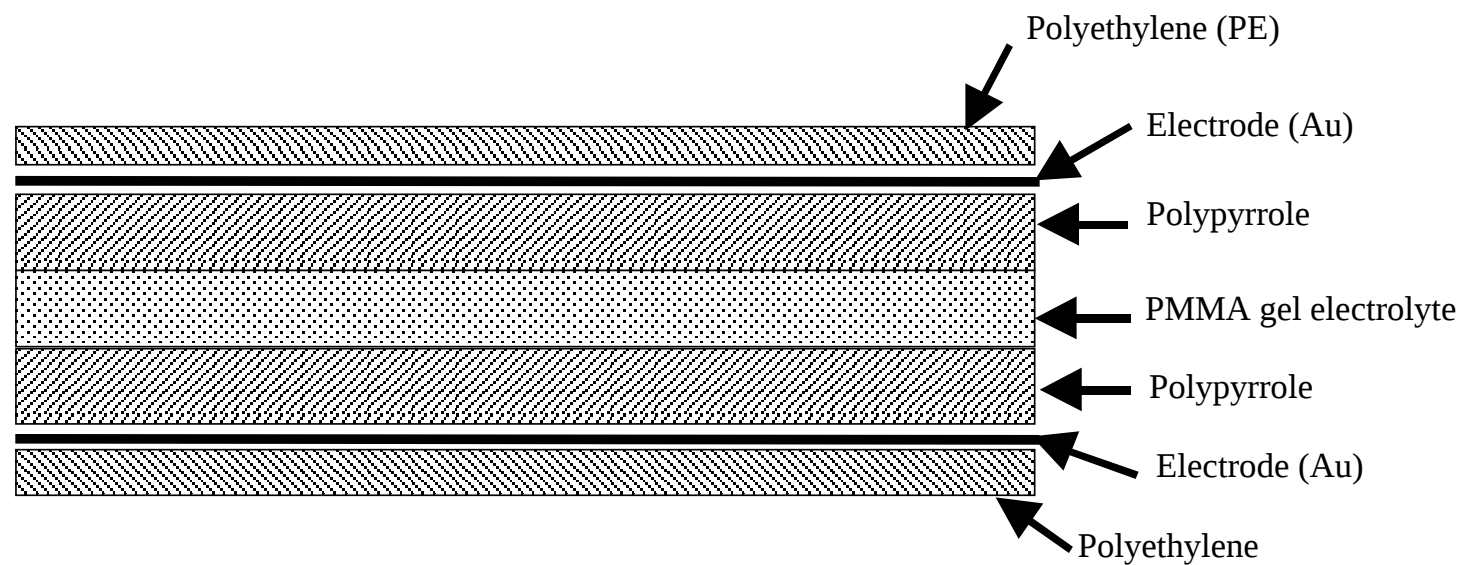


Figure 2a: Cross-section of an encapsulated bilayer actuator. The actuator is 40 *mm* long, and 10 *mm* wide. Thicknesses of the layers are: Gel: 100 μm ; Au: 100 *nm* ; Polypyrrole: 40 μm ; PE: 20 μm .

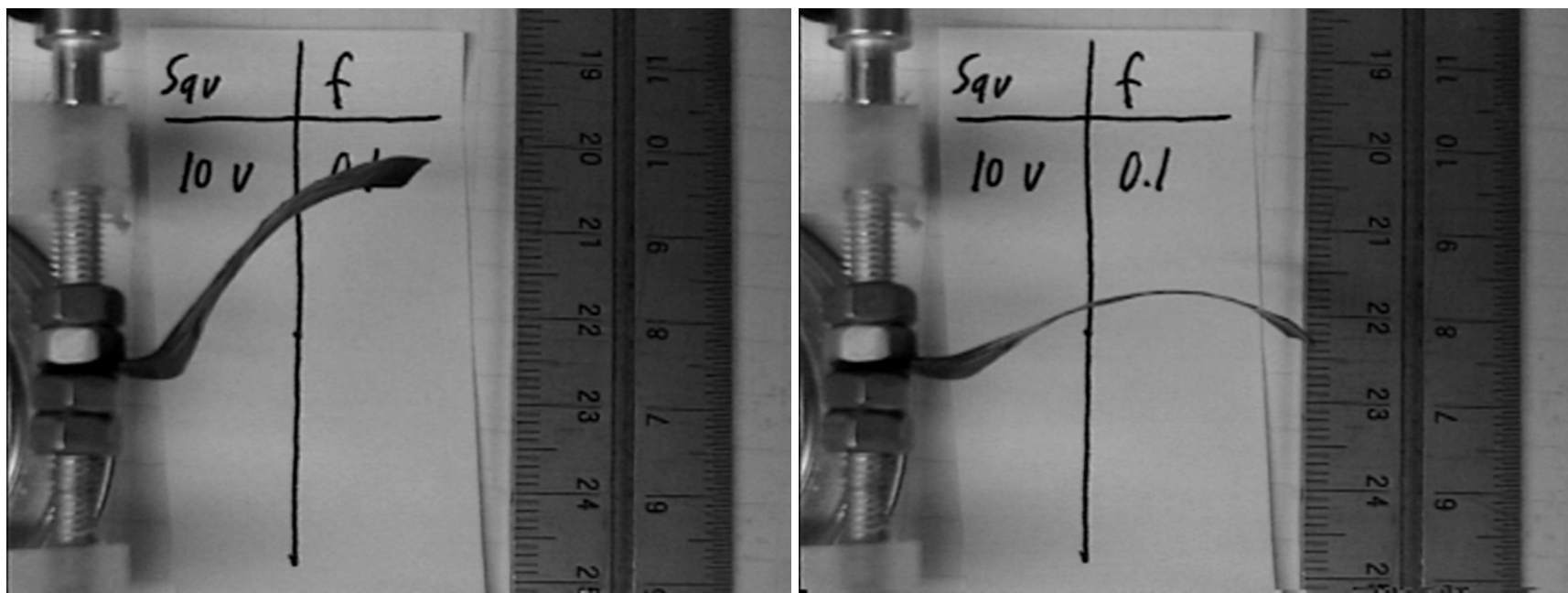


Figure 2b: Photographs showing the maximum extent of deflection of an encapsulated bilayer upon activation with a $\pm 5\text{ V}$ square wave at 0.1 Hz .

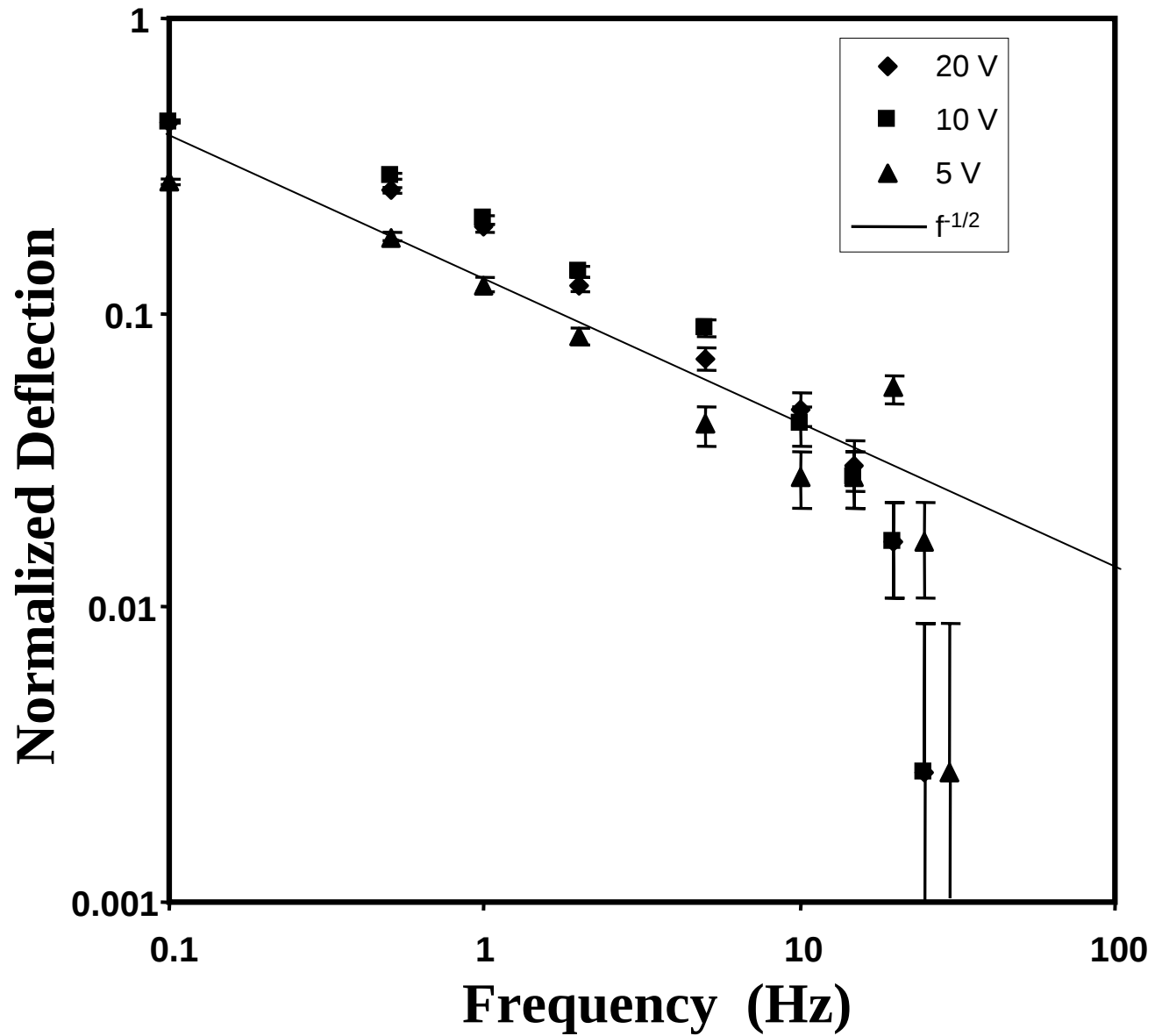


Figure 3: Mechanical frequency response of an encapsulated conducting polymer bilayer at various square wave peak to peak excitation voltages. The solid line represents the expected response assuming semi-infinite planar diffusion. Deflection is normalized to actuator length.