



# Self-Adapting and Self-powered Sensors Based on Triboelectric-Electrochemical Hybridized Mechanism

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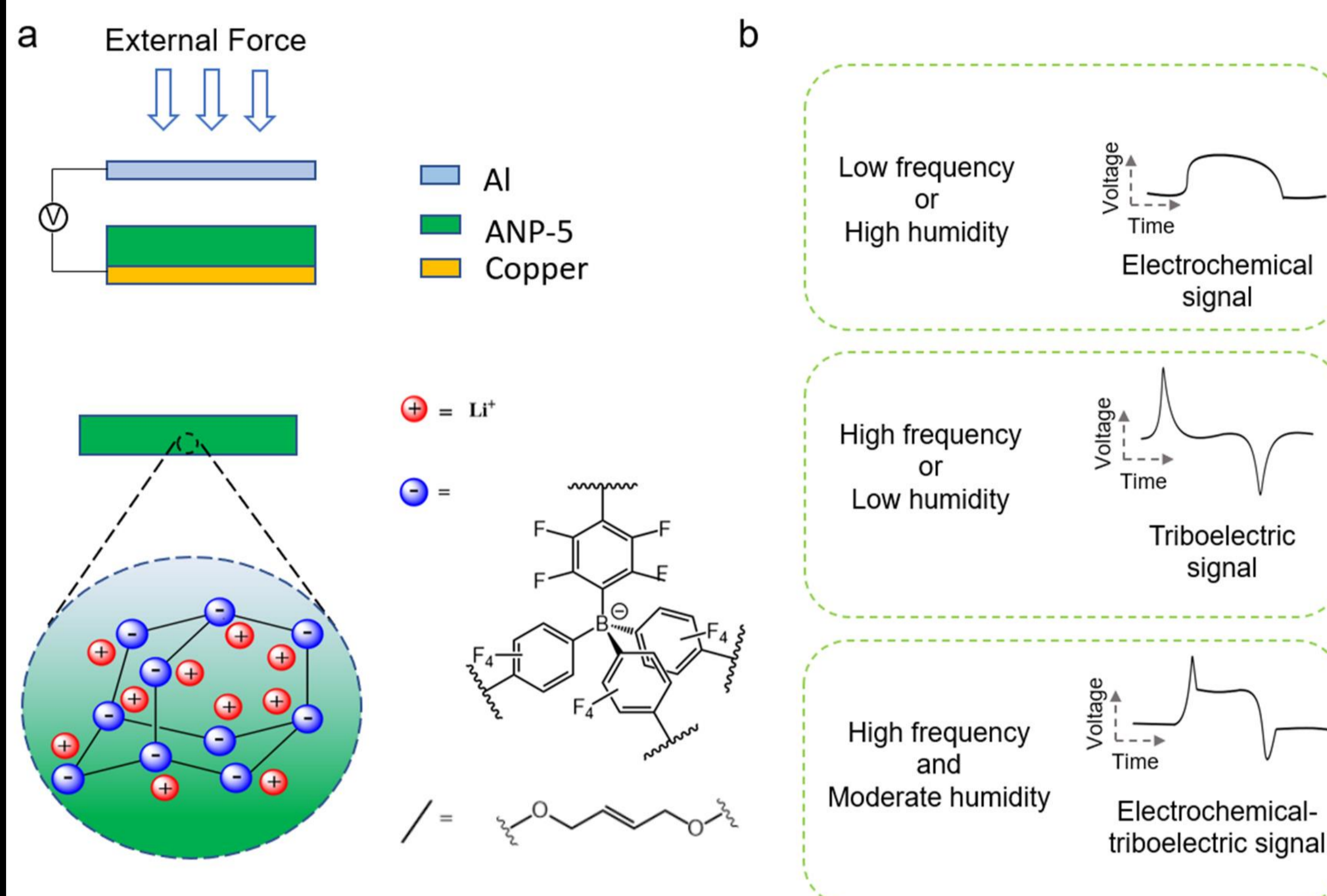
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Energy & Environmental Engineering Lab

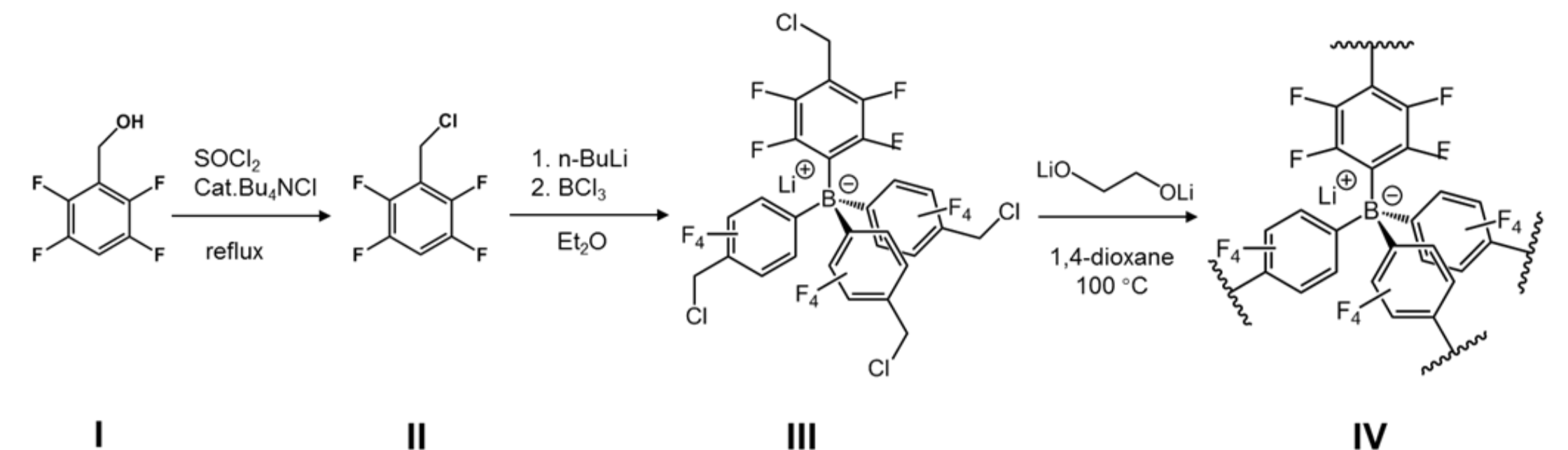
## INTRODUCTION

### THE DESIGN AND CONFIGURATION OF HYBRIDIZED SENSOR

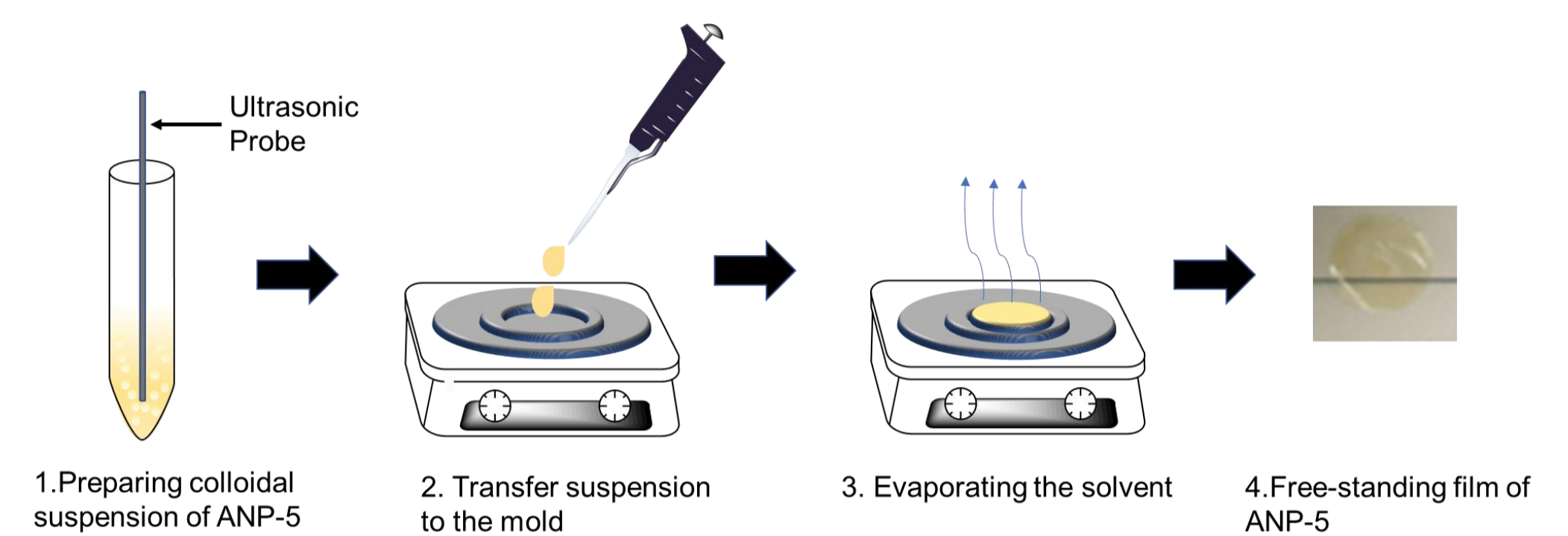


## EXPERIMENTAL SECTION

### THE SYNTHESIS APPROACH OF ANP-5

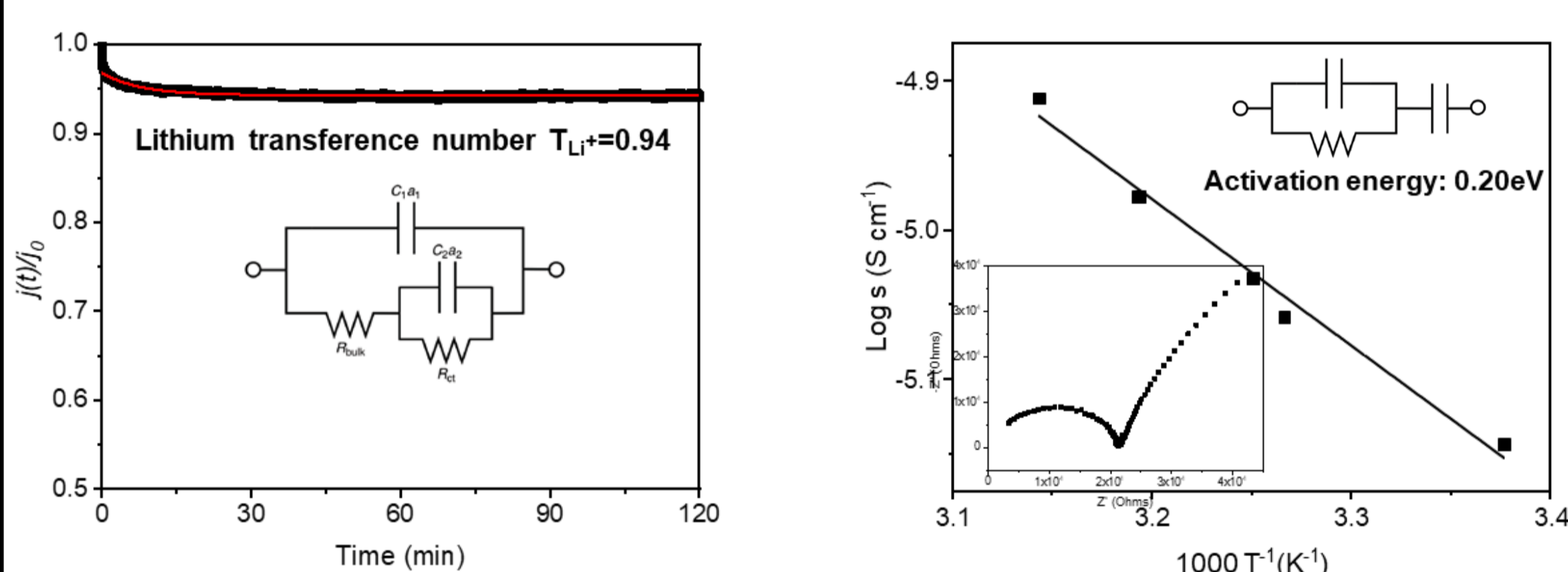


### PREPARATION OF ANP-5 FILM

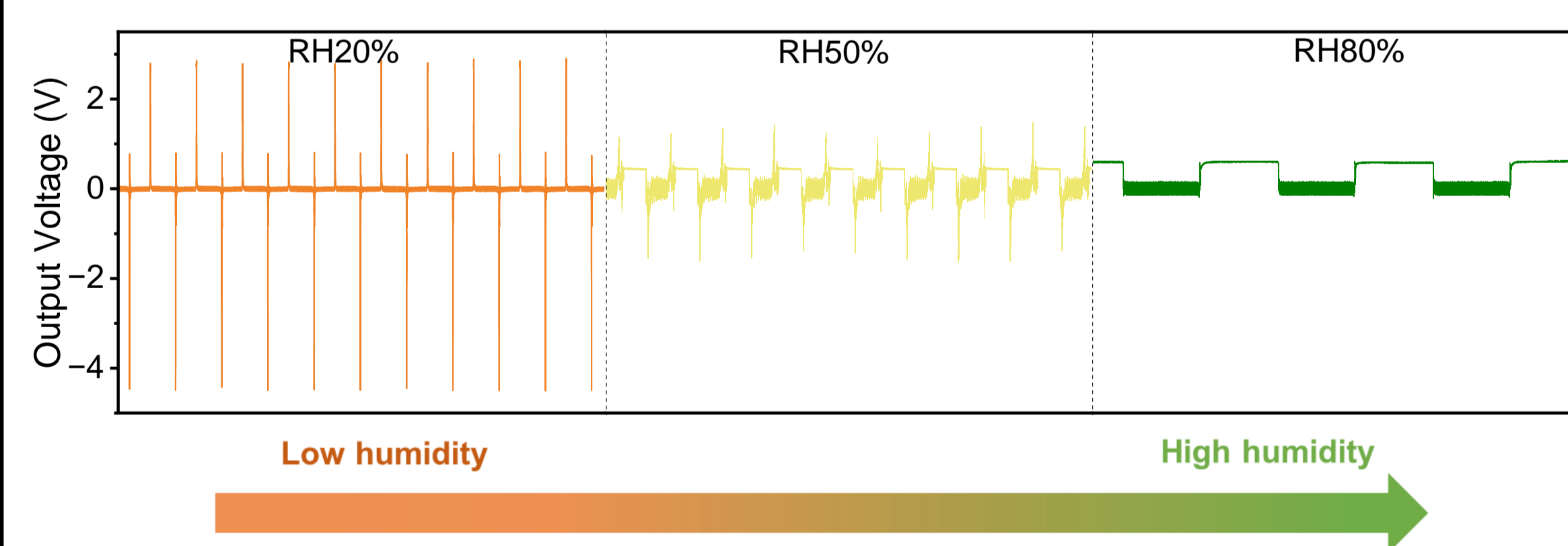


## RESULTS & DISCUSSION

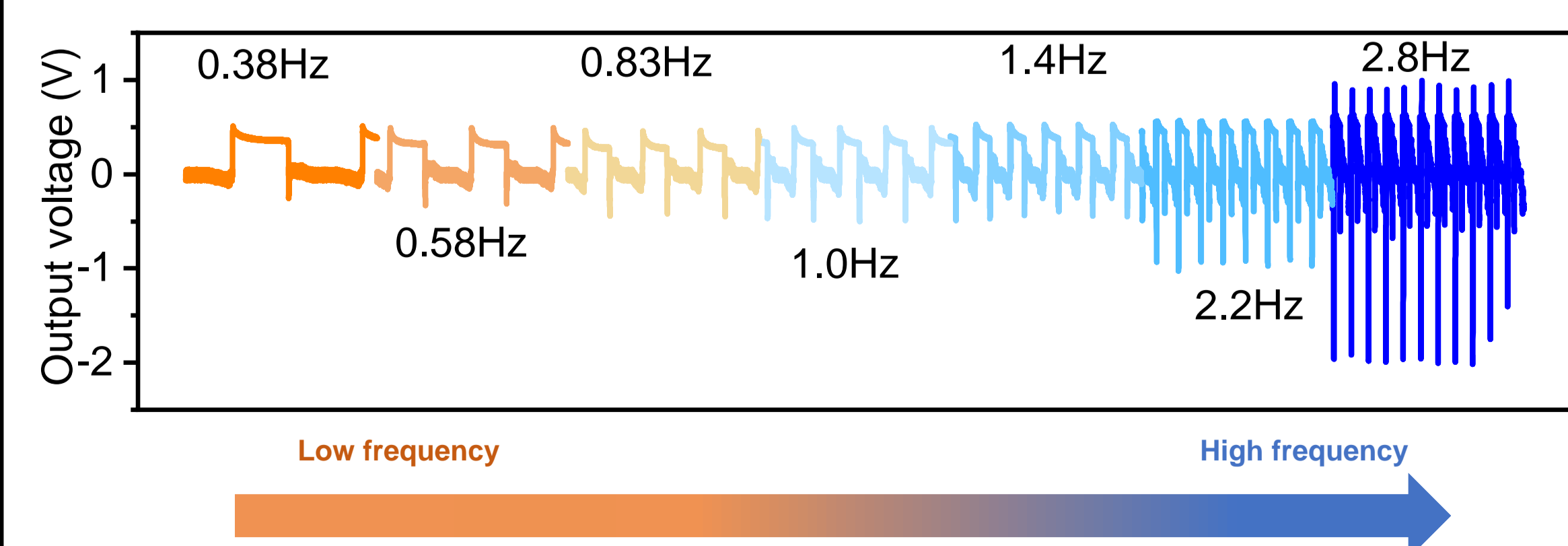
### SINGLE-ION CONDUCTING PROPERTIES OF ANP-5



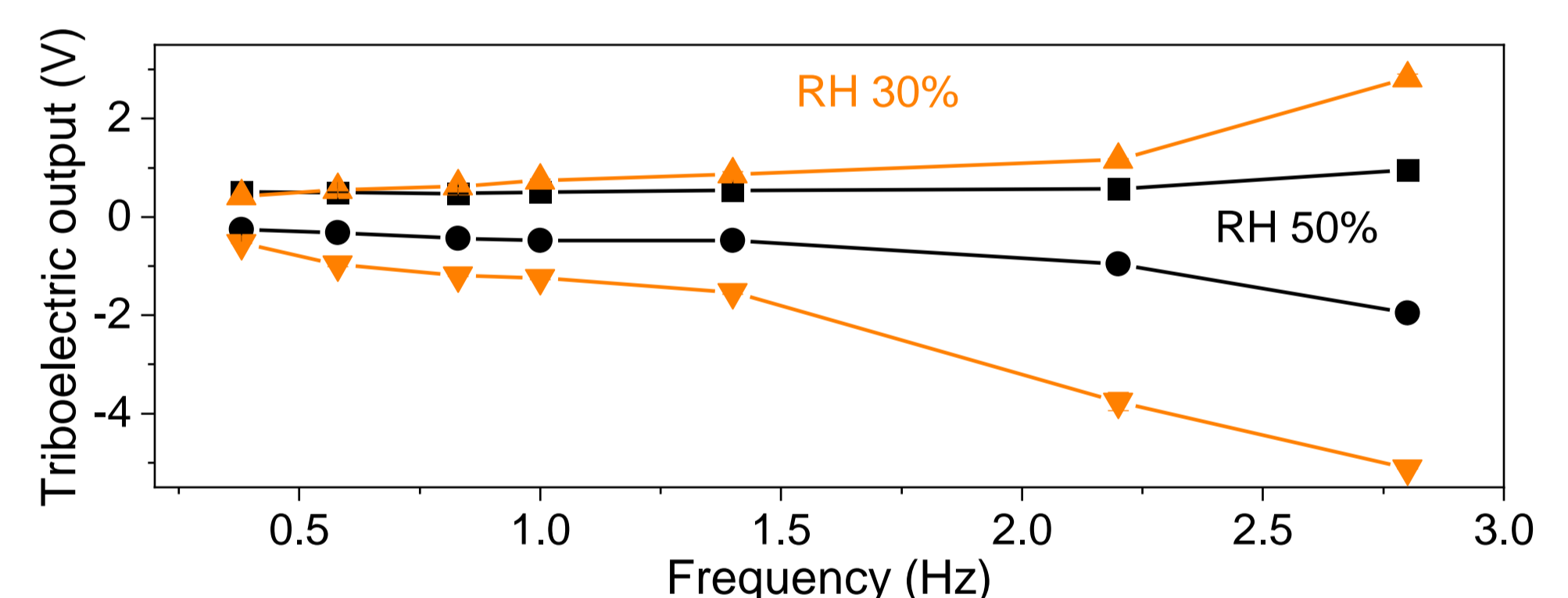
### THE RESPONSE OF HYBRIDIZED SENSOR TO ENVIRONMENT HUMIDITY



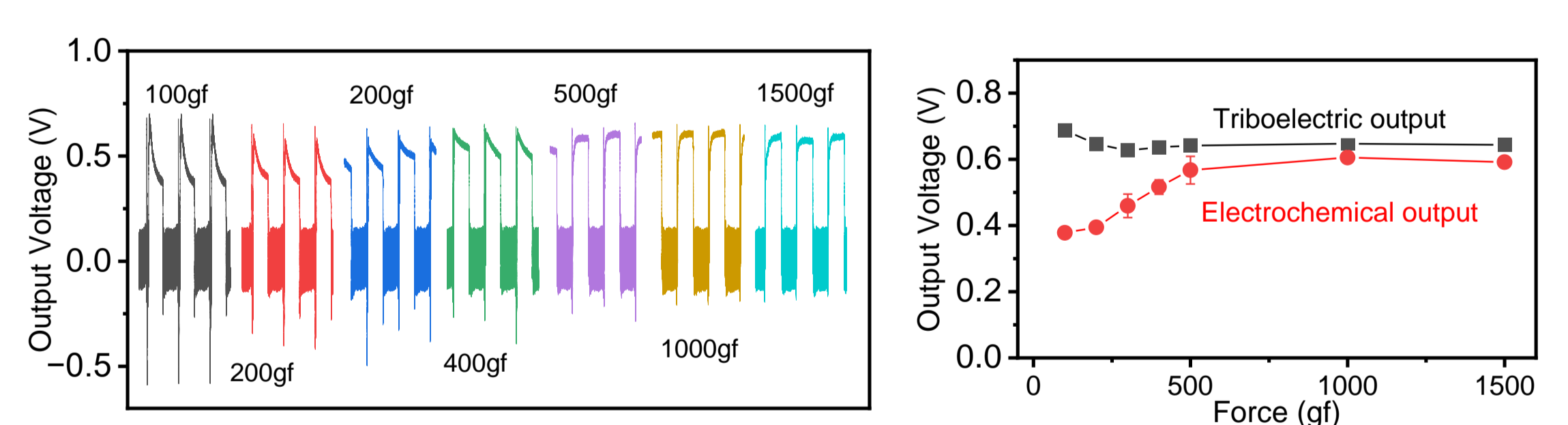
### THE RESPONSE OF HYBRIDIZED SENSOR TO FREQUENCY OF STIMULUS



### THE FREQUENCY DEPENDENCE OF VOLTAGE OUTPUT



### THE FORCE DEPENDENCE OF VOLTAGE OUTPUT



## CONCLUSION

1. Simple strategy for fabricating triboelectric-electrochemical hybridized sensor using single-ion conducting material was demonstrated.
2. The multiple functions of the hybridized sensor were illustrated by applying different environment humidity, stimulus in various frequency and forces of different magnitude. These results show the can be used for sensing static stimuli, dynamic stimuli and environmental humidity simultaneously.
3. This new design is promising for simplifying the fabrication and operation of multifunctional sensors while enabling the excellent performance of the sensor in future electronic devices and smart systems.