Supporting Information

For

Ingestible, bio-friendly and flexible flour-based humidity sensors with a wide sensing range

Shijie Hou,[†] Yukuan Shen,[†] Yan Wang,[†] Xuan Zhang,[†] Wei Luo[†] and Jia Huang[*,†,‡]

[†]Interdisciplinary Materials Research Center, School of Materials Science and Engineering, Shanghai Institute of Intelligent Science and Technology, Tongji University, Shanghai, 201804, P. R. China;

[‡]Translational Research Institute of Brain and Brain-Like Intelligence, Shanghai Fourth People's Hospital Affiliated to Tongji University, Tongji University, Shanghai, 200434, P. R. China.

Corresponding Author

*** (J. H.). E-mail: huangjia@tongji.edu.cn**

Supplementary Figures

Figure S1. The digital photograph of the Gly-K_2CO_3 flour-based humidity sensor device using PLA as substrates for tests.

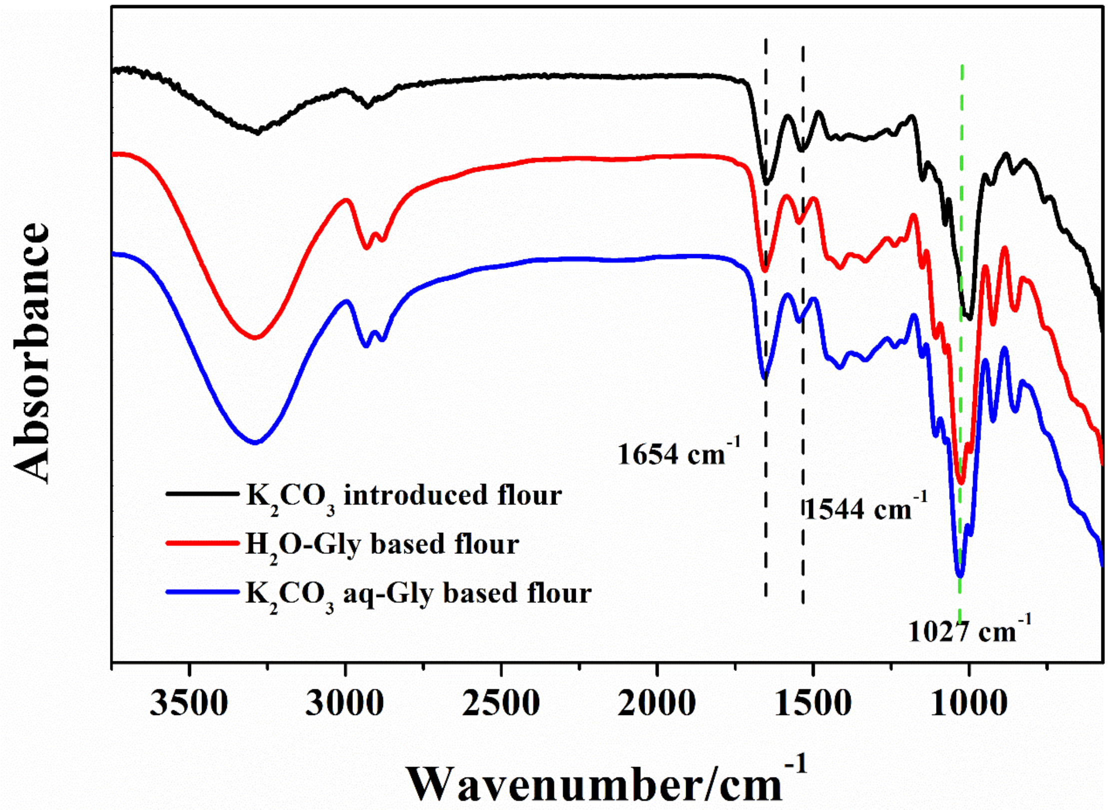

Figure S2. Infrared spectra of K_2CO_3 introduced flour, H_2O-Gly introduced flour and K_2CO_3 aq-Gly introduced flour respectively.

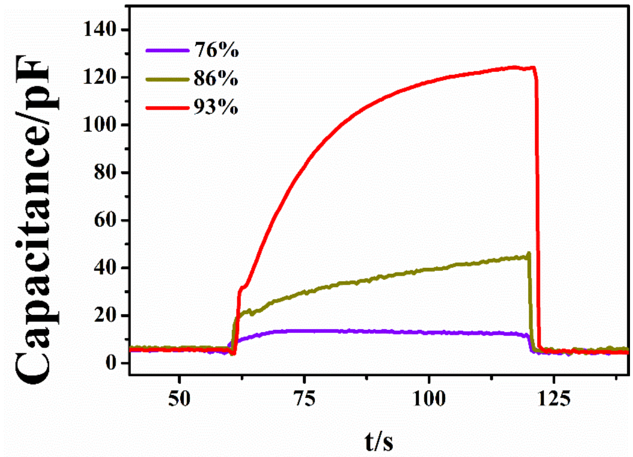

Figure S3. Response/recovery curve of the K_2CO_3 introduced humidity sensors by changing humidities between 60% RH air and 76%, 86% or 93% RH air (at a voltage of 0.5 V and a frequency of 1 kHz).

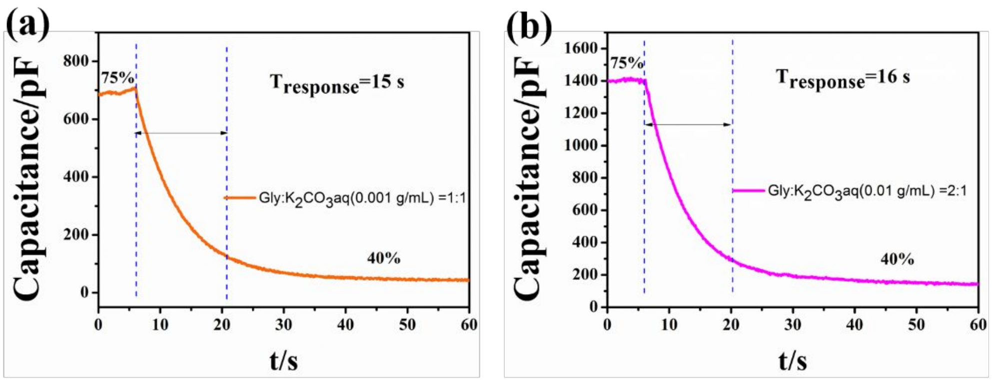

Figure S4. Response curves of the K_2CO_3-Gly introduced flour sensors using PLA as substrate from 75% RH air to 40% RH surroundings for different concentrations of K2CO3 or glycerin solutions: (a) K_2CO_3 (0.001 g/mL) aq-Gly (volume ratio 1:1) flour-based sensor; (b) K_2CO_3 (0.01 g/mL) aq-Gly (volume ratio 1:2) flour-based sensor.

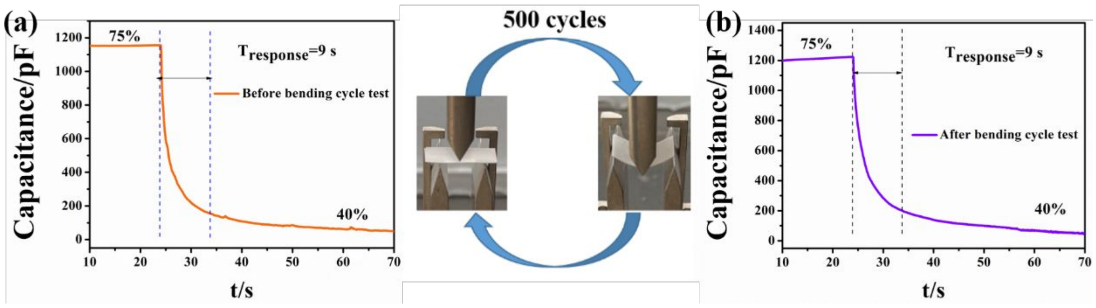

Figure S5. (a) Response curve of the sensors by changing humidities between 75% RH air and 40% RH surroundings. (b) Response curve of the sensors by changing humidities between 75% RH air and 40% RH surroundings after bending test with 500 cycles.

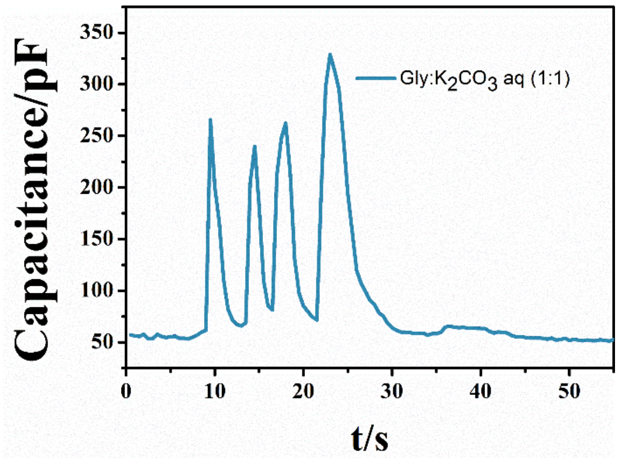

Figure S6. Response curve of the continuous mouth-breathing test for different breath strength for the Gly-K_2CO_3 introduced flour sensor.