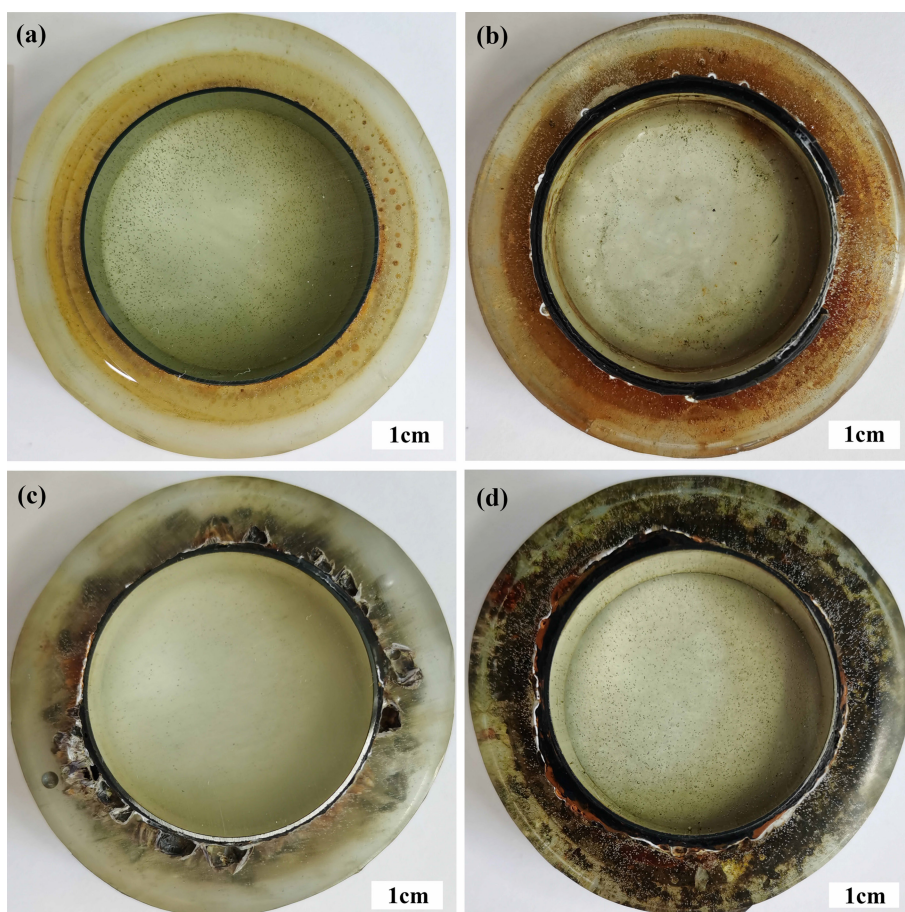


**Figure. S1.** Details of dimensional information for metal specimens.



**Figure. S2.** Macro-morphologies on the cross-section of the sensors after exposure in the atmospheric zone (a), the splash zone (b), the tidal zone (c), and the immersion zone (d), respectively.