

# **A sensitive electrochemical sensor for *in vitro* detection of parathyroid hormone based on MoS<sub>2</sub>-graphene composite**

Hyeong-U Kim<sup>1,†</sup>, Hye Youn Kim<sup>2,†</sup>, Atul Kulkarni<sup>3</sup>, Chisung Ahn<sup>1</sup>, Yinhua Jin<sup>1</sup>, Yeongseok Kim<sup>3</sup>, Kook-Nyung Lee<sup>2</sup>, Min-Ho Lee<sup>2,\*</sup> and Taesung Kim<sup>1,3,\*</sup>

<sup>1</sup> SKKU Advanced Institute of Nano Technology (SAINT), Sungkyunkwan University, Suwon, Gyeonggi-do, South Korea

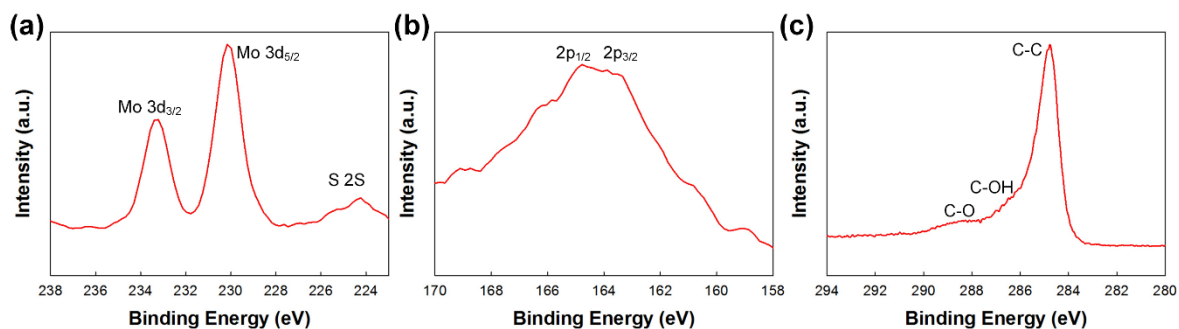
<sup>2</sup> Korea Electronics Technology Institute, Seongnam, Gyeonggi-do, South Korea

<sup>3</sup> Mechanical Engineering, Sungkyunkwan University, Suwon, Gyeonggi-do, South Korea

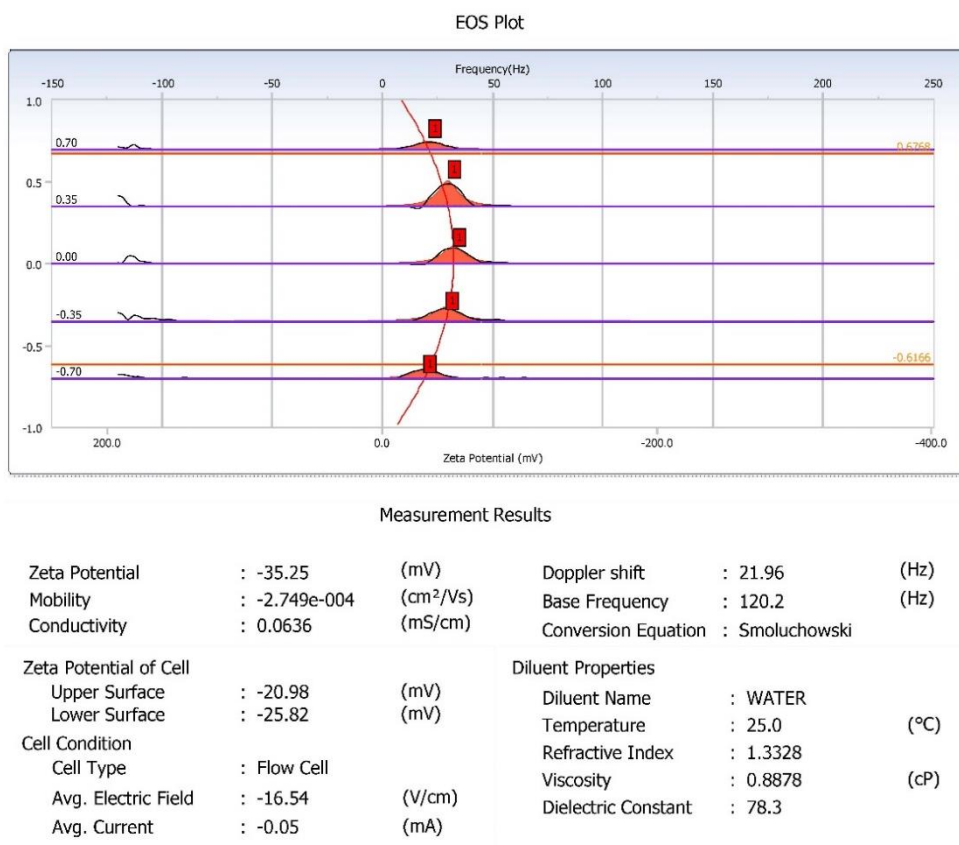
<sup>†</sup> These authors contributed equally to this work

Corresponding author: Taesung Kim, Min-Ho Lee

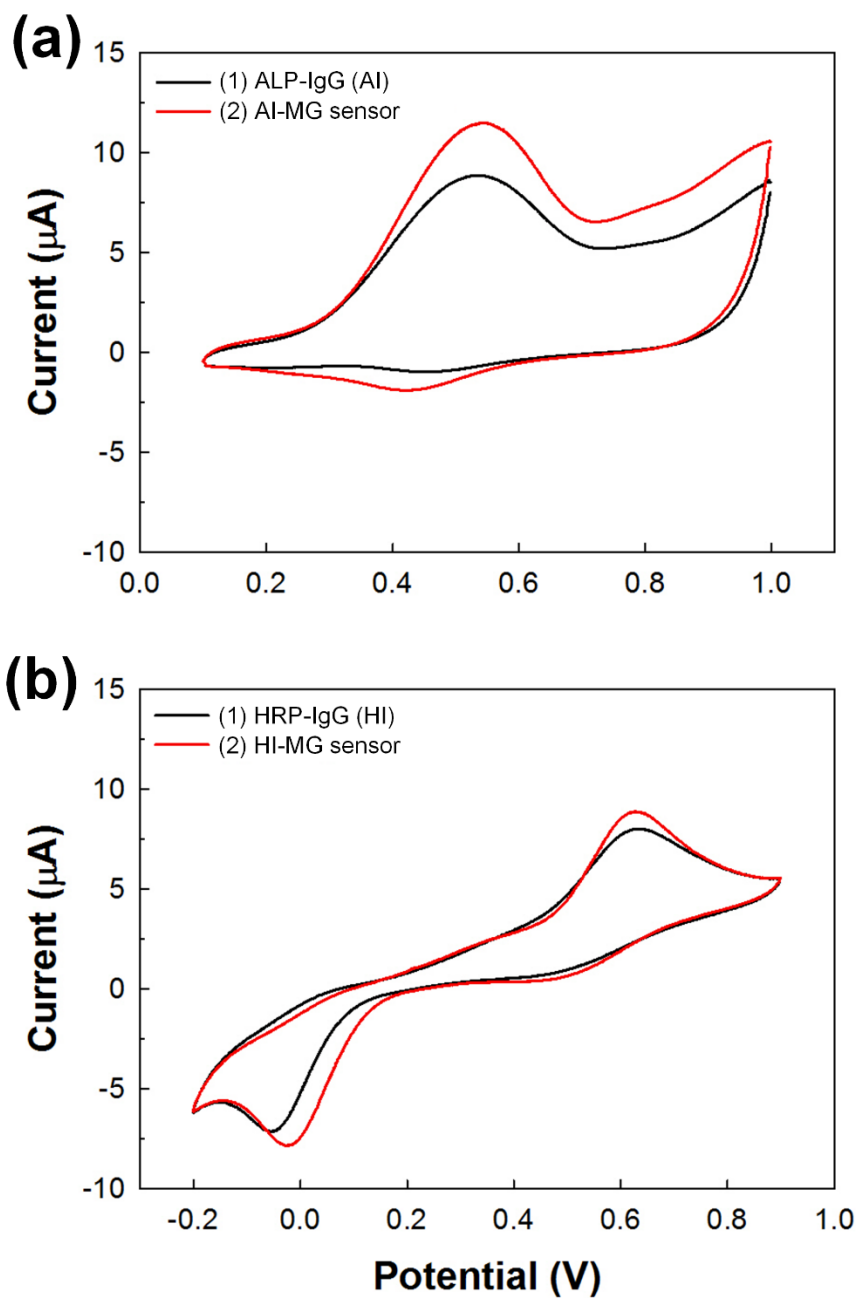
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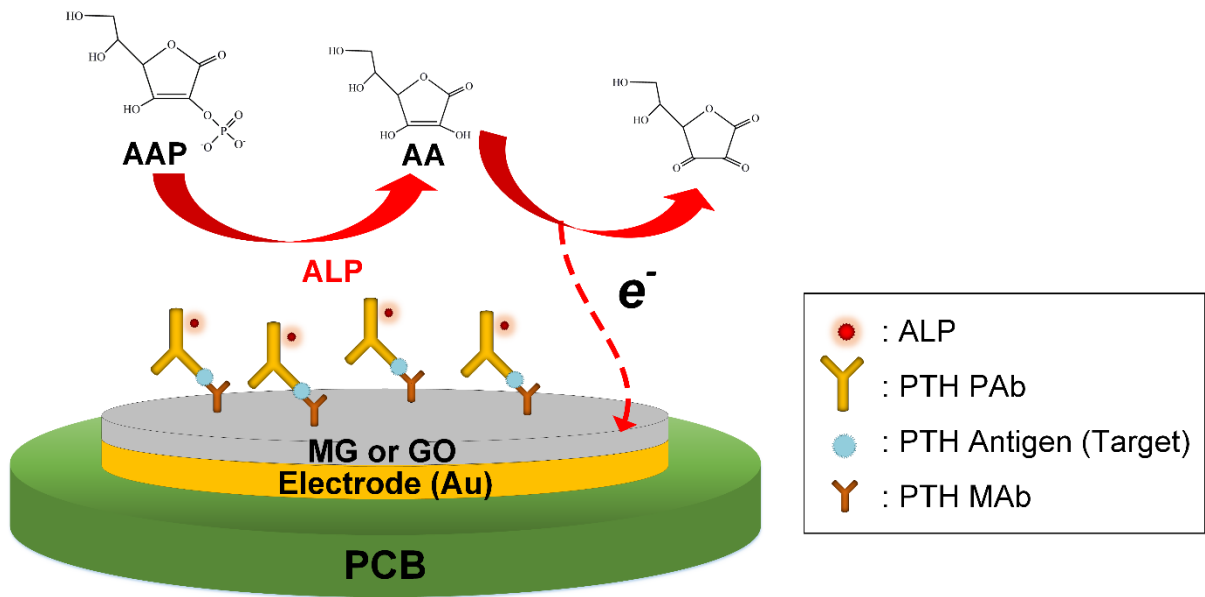
**Supplementary Fig. S1** High resolution XPS spectra corresponding to MG composite (a) Mo 3d, S 2p (b) 2p and (c) C 1s



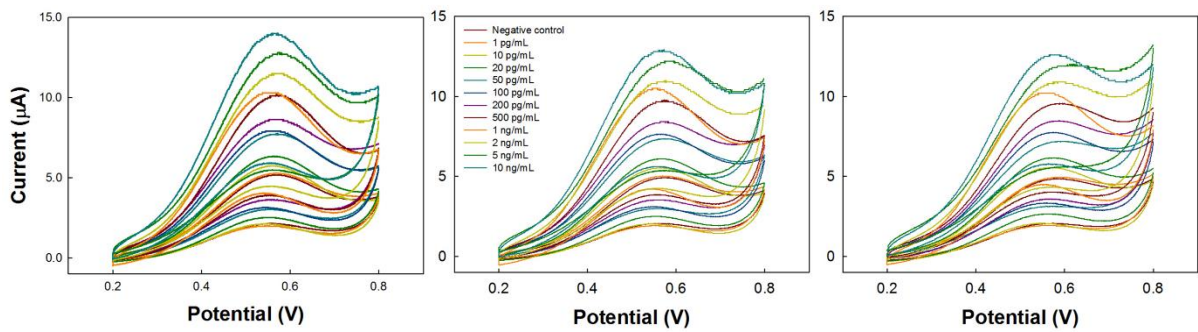
**Supplementary Fig. S2** Zeta potential of MG composite



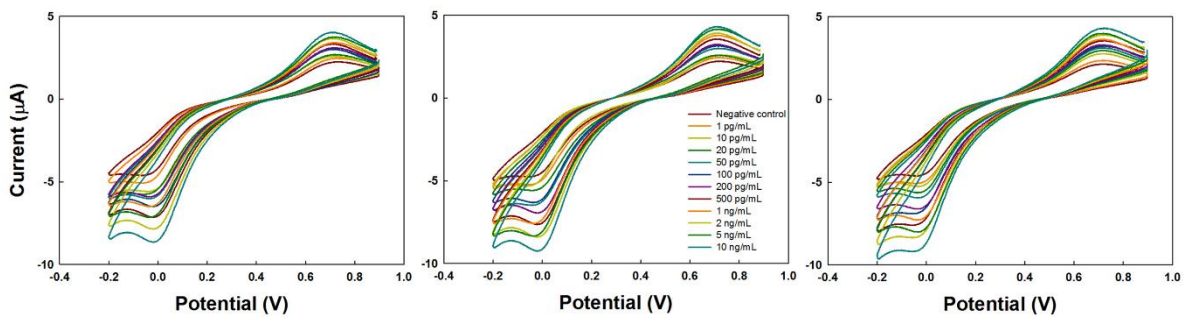
**Supplementary Fig. S3** Cyclic voltammogram (CV) measurement of modified electrodes (a) (1) AI electrode (2) AI-MG electrode at scan rate 100 mV/s (b) (1) HI electrode (2) HI-MG electrode at scan rate 100 mV/s, respectively



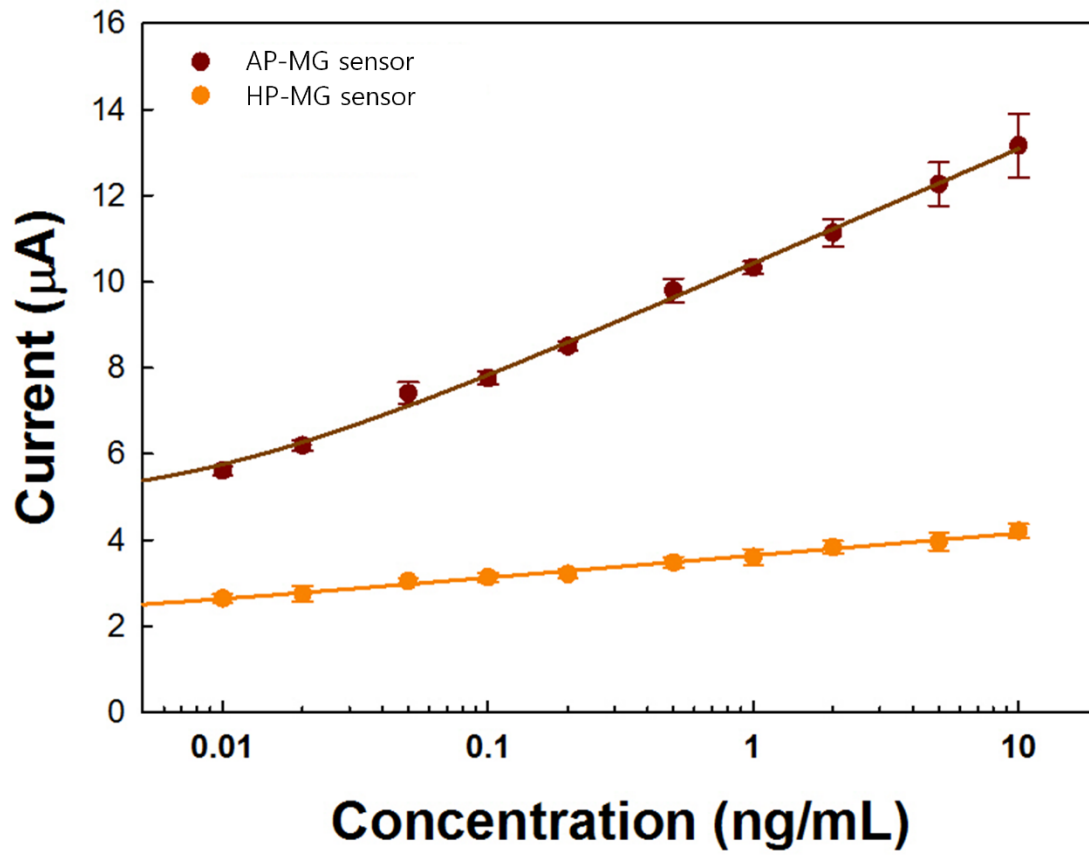
Supplementary Fig. S4 Mechanism of AP-GO and AP-MG sensors with AAP substrate



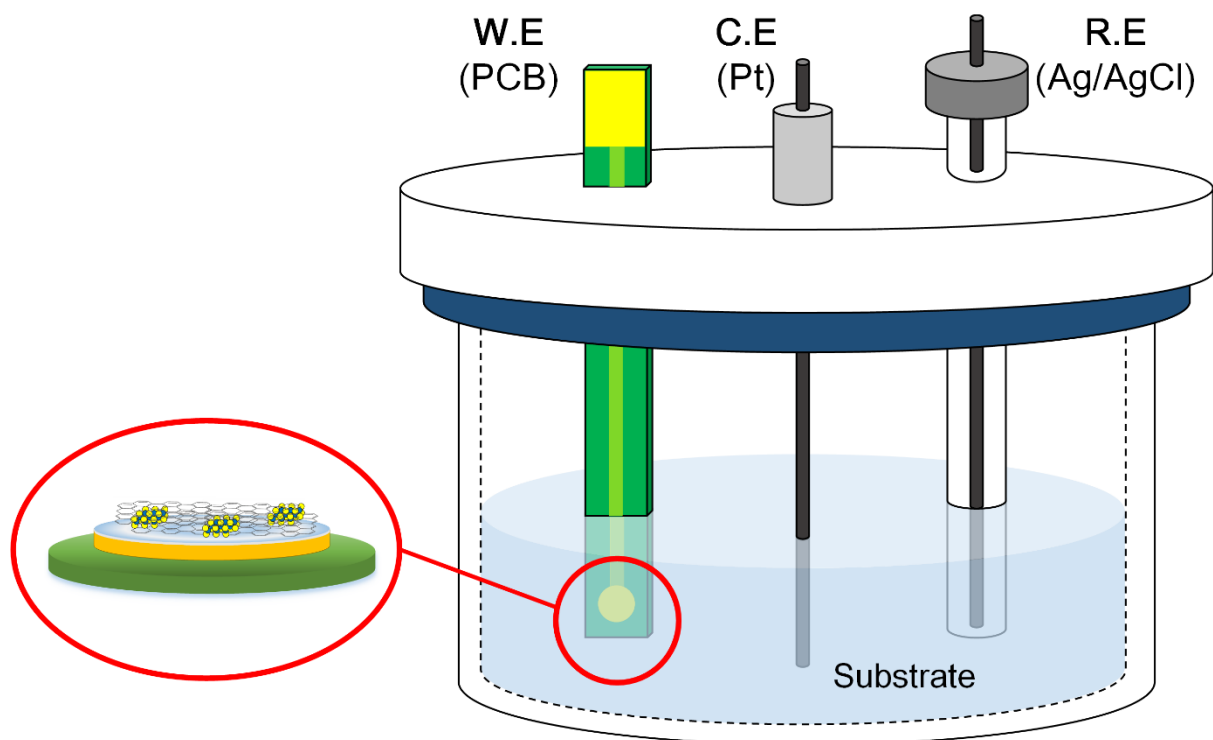
Supplementary Fig. S5 Three cycling of AP-MG sensor with different concentration of PTH



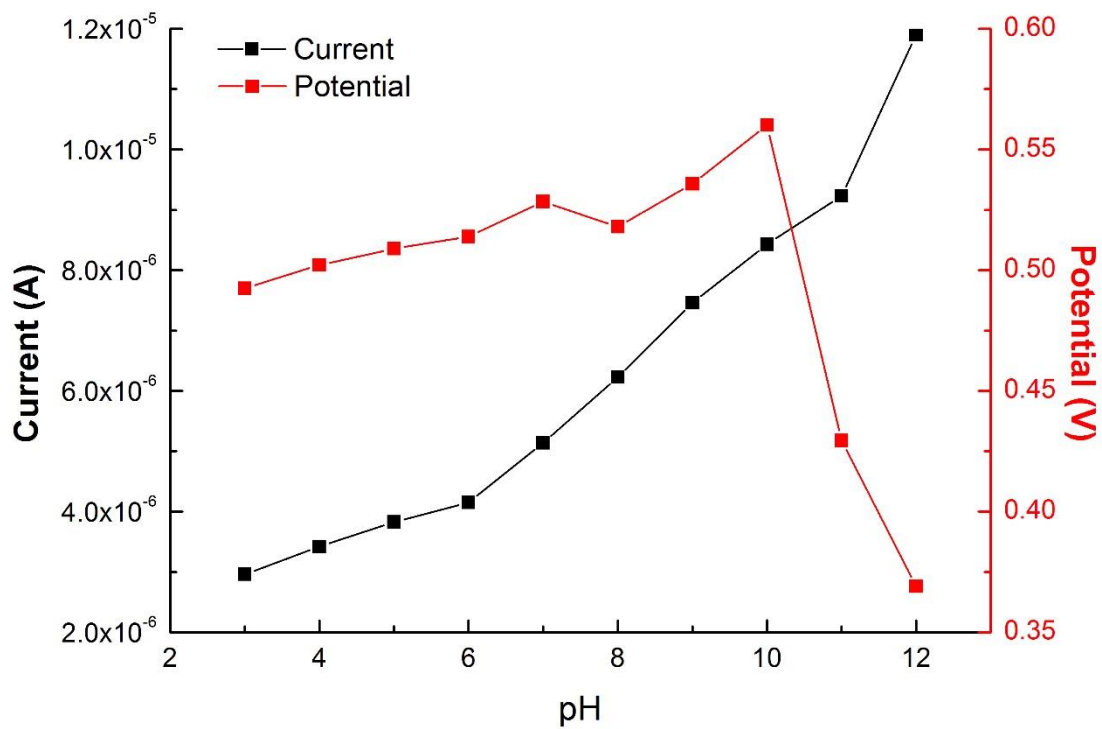
Supplementary Fig. S6 Three cycling of HP-MG sensor with different concentration of PTH



**Supplementary Fig. S7** PTH calibration curve obtained at PTH concentration ranging from 1 pg/mL to 10 ng/mL by both AP-MG and HP-MG sensors



**Supplementary Fig. S8** Schematic representation of experimental setup wherein Au-PCB as working electrode, Pt as counter electrode and Ag/AgCl (Sat'd 3M KCl) as reference electrode, respectively. MG is deposited on Au-PCB electrode



**Supplementary Fig. S9** Effect of (AAP solution in 50 mM Tris-HCl + 10 mM MgCl<sub>2</sub>) pH on A P-MG sensor. The maximum potential (0.55 V) is observed at pH 9.6