Electronic Supplementary Information (ESI)

for

Construction of adsorbents with graphene and its derivatives for wastewater treatment: A review

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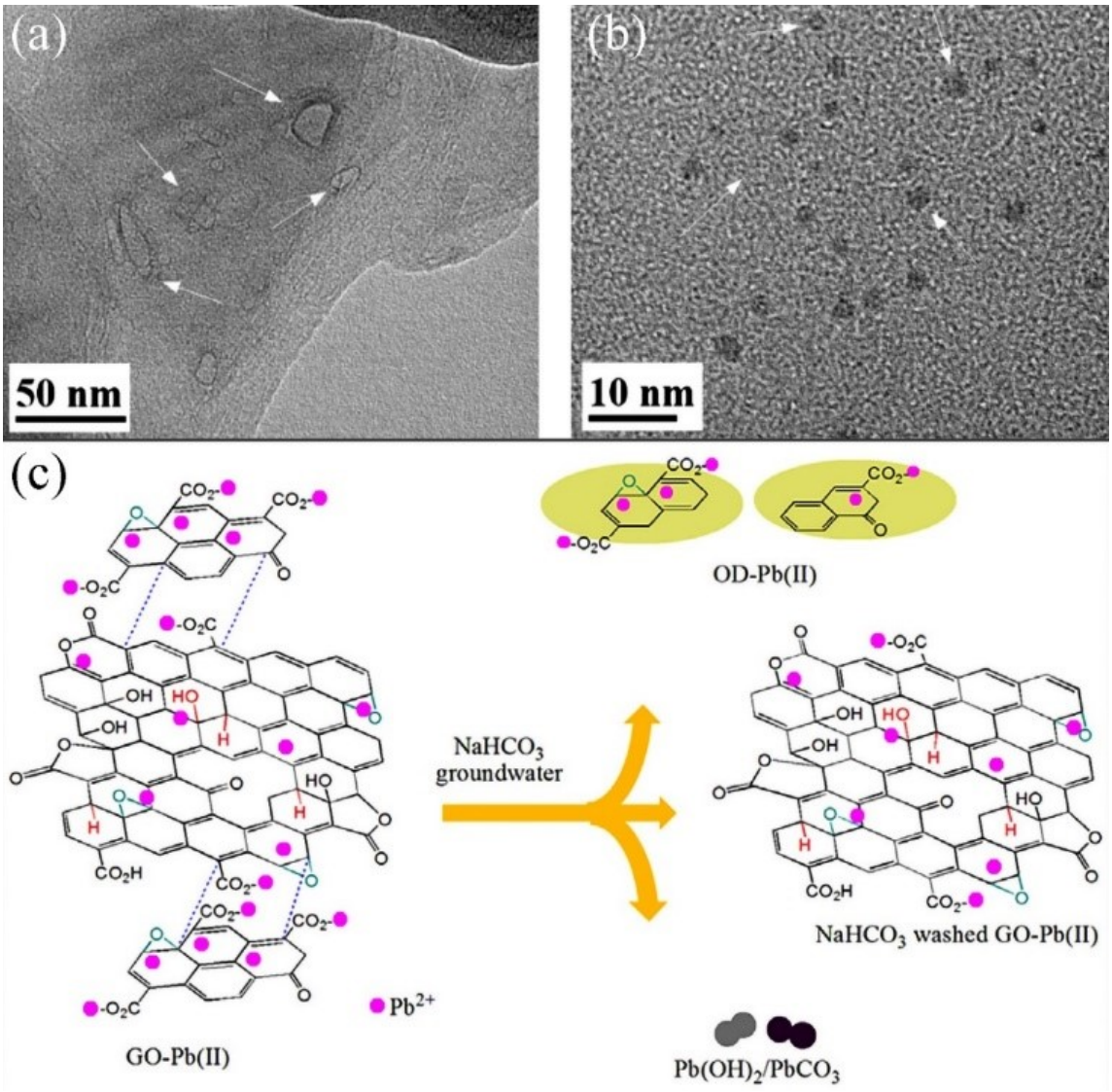

Figure S1. a-c) TEM images of GO sheets attached with OD (a) and the OD separated by alkali washing (b), where OD represents oxidative debris, and (c) is the schematic depiction of the fate of GO adsorbed with Pb^{2+} under alkaline groundwater conditions. Adapted with permission from the ref.[1] Copyright 2020, Elsevier.

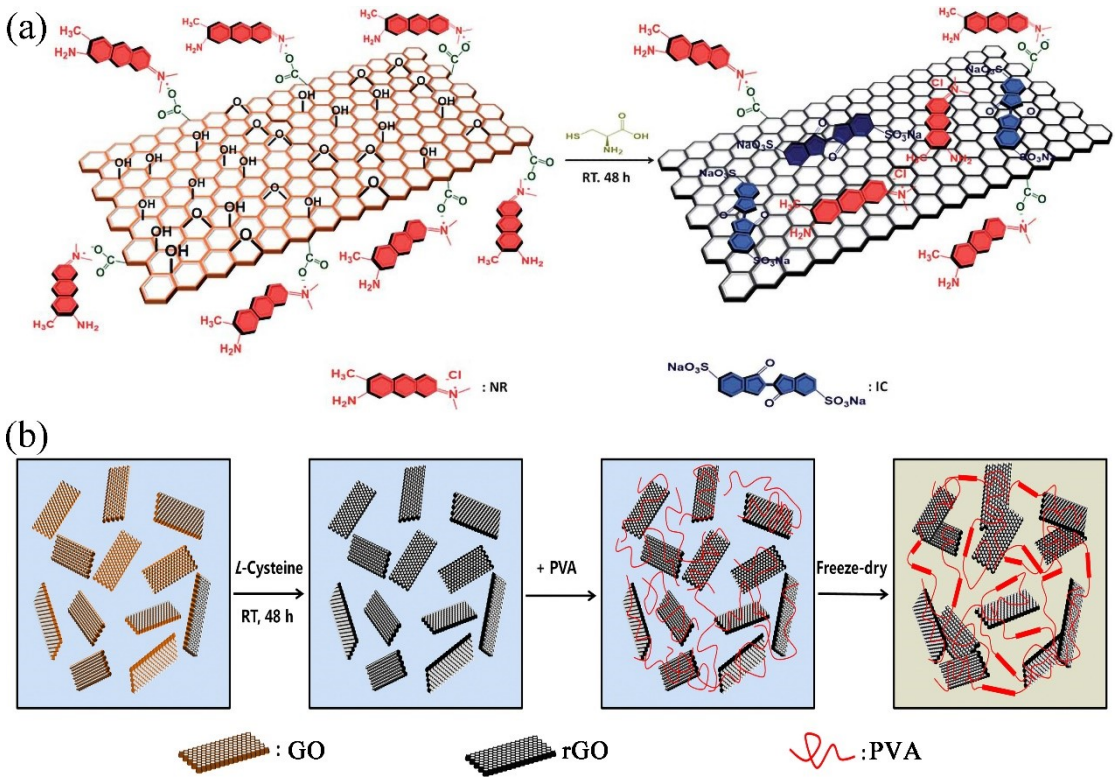

Figure S2. a-c) Schematic illustration of the adsorption process using Cys-rGO as the adsorbent (a), and the preparation process of the rGO/PVA aerogels (b). Panels (a) and (b) are reproduced with permission from refs.,[2, 3] with Copyrights 2016, RSC and 2017, Springer, respectively.

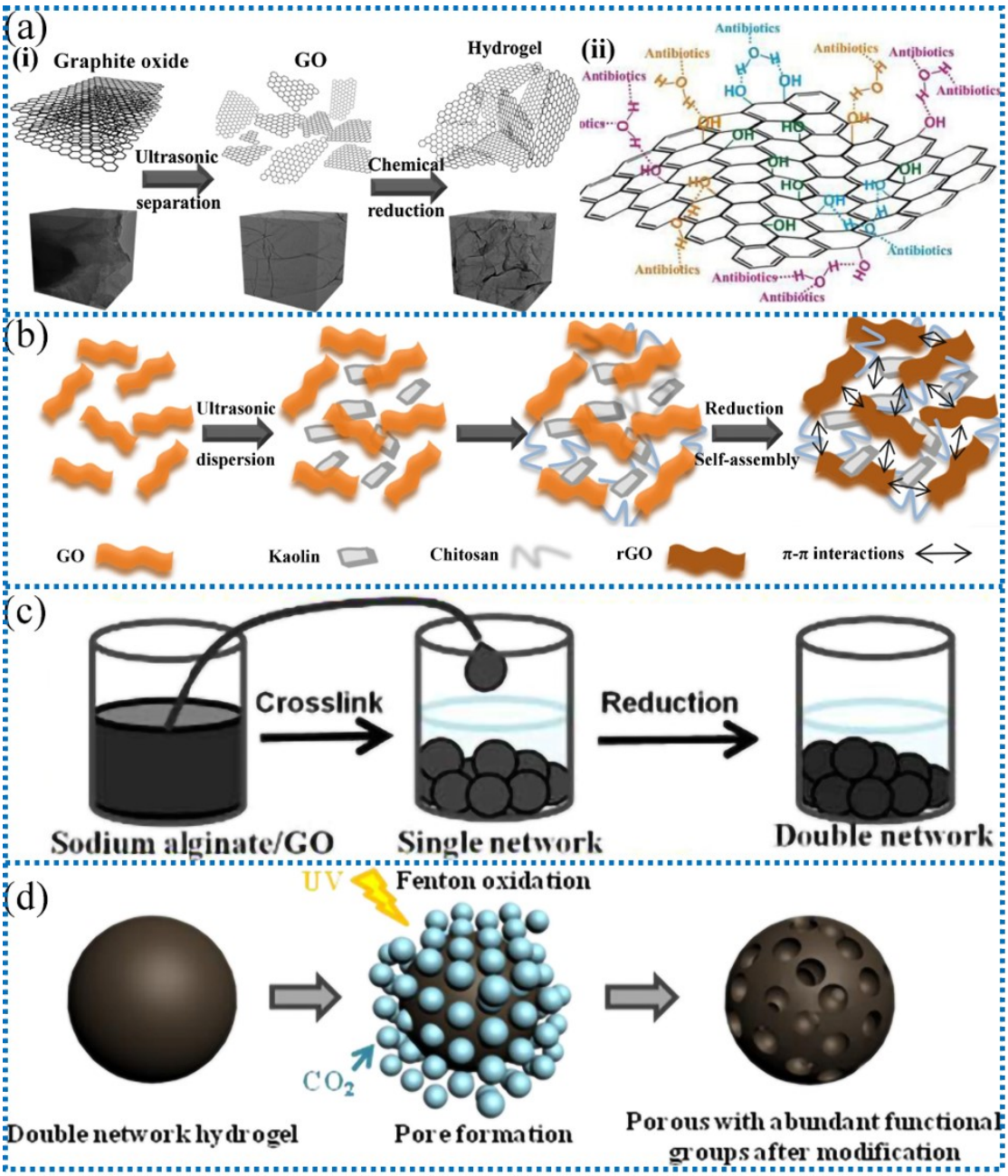

Figure S3. (a) Schematic illustration of the fabrication of a 3D graphene hydrogel (i) and water-enhanced mechanism for the graphene hydrogel adsorbent (ii). Adapted with permission from ref.[4] Copyright 2019, Elsevier. (b) Scheme depicting the formation of the kaolin/CS/rGO composite adsorbent. Adapted with permission from ref.[5] Copyright 2019, Springer. (c) Scheme showing the preparation process of alginate/graphene composite hydrogel beads with double crosslinking networks. Reproduced with permission from ref.[6] Copyright 2016, RSC. (d) Scheme illustrating the further physical and chemical modification of the alginate/graphene composite hydrogel. Reproduced with permission from ref.[7] Copyright 2017, Elsevier.

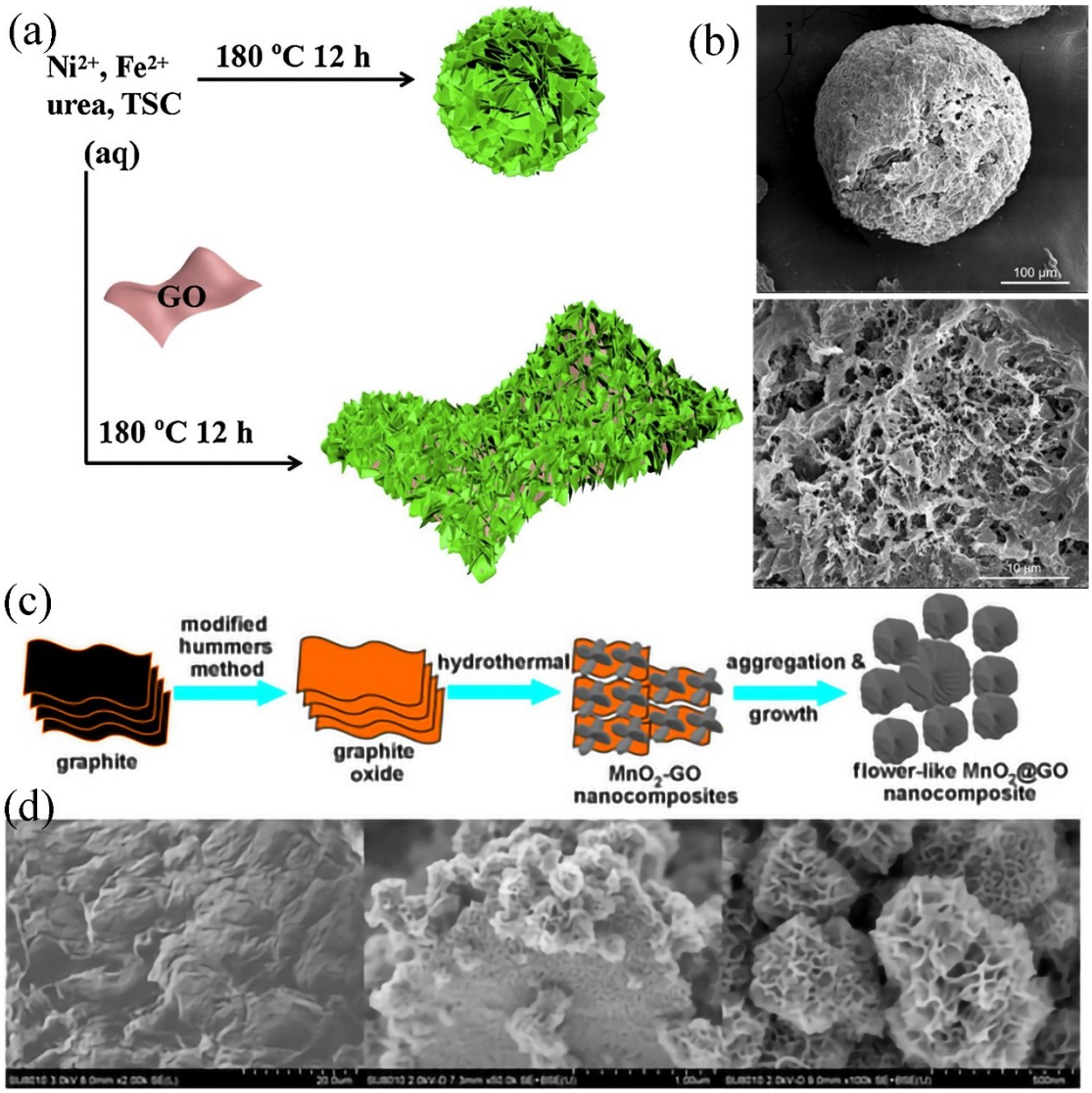

Figure S4. (a) Schematic illustration of the synthesis of NiFe LDH microspheres and a GO-NiFe LDH composite. Reproduced with permission from ref.[8] Copyright 2019, Elsevier. (b) SEM image of the 3D graphene microsphere at different magnification scales. Reproduced with permission from ref.[9] Copyright 2017, Springer. (c,d) Schematic illustration (c) and corresponding SEM images (d) of the GO, MnO_2-GO nanocomposite, and flower-like MnO_2@GO. Reproduced with permission from ref.[10] Copyright 2017, The Institution of Engineering and Technology.

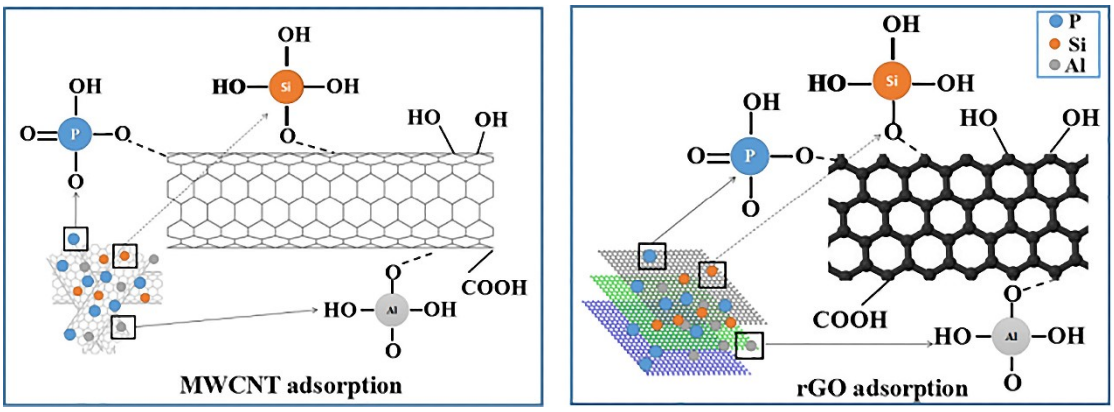

Figure S5. Schematic representation of the adsorption of P-, Si-, and Al-containing contaminants onto MWCNTs and rGO adsorbents based on H-bonding interactions. Reproduced with permission from ref.[11] Copyright 2019, Elsevier.

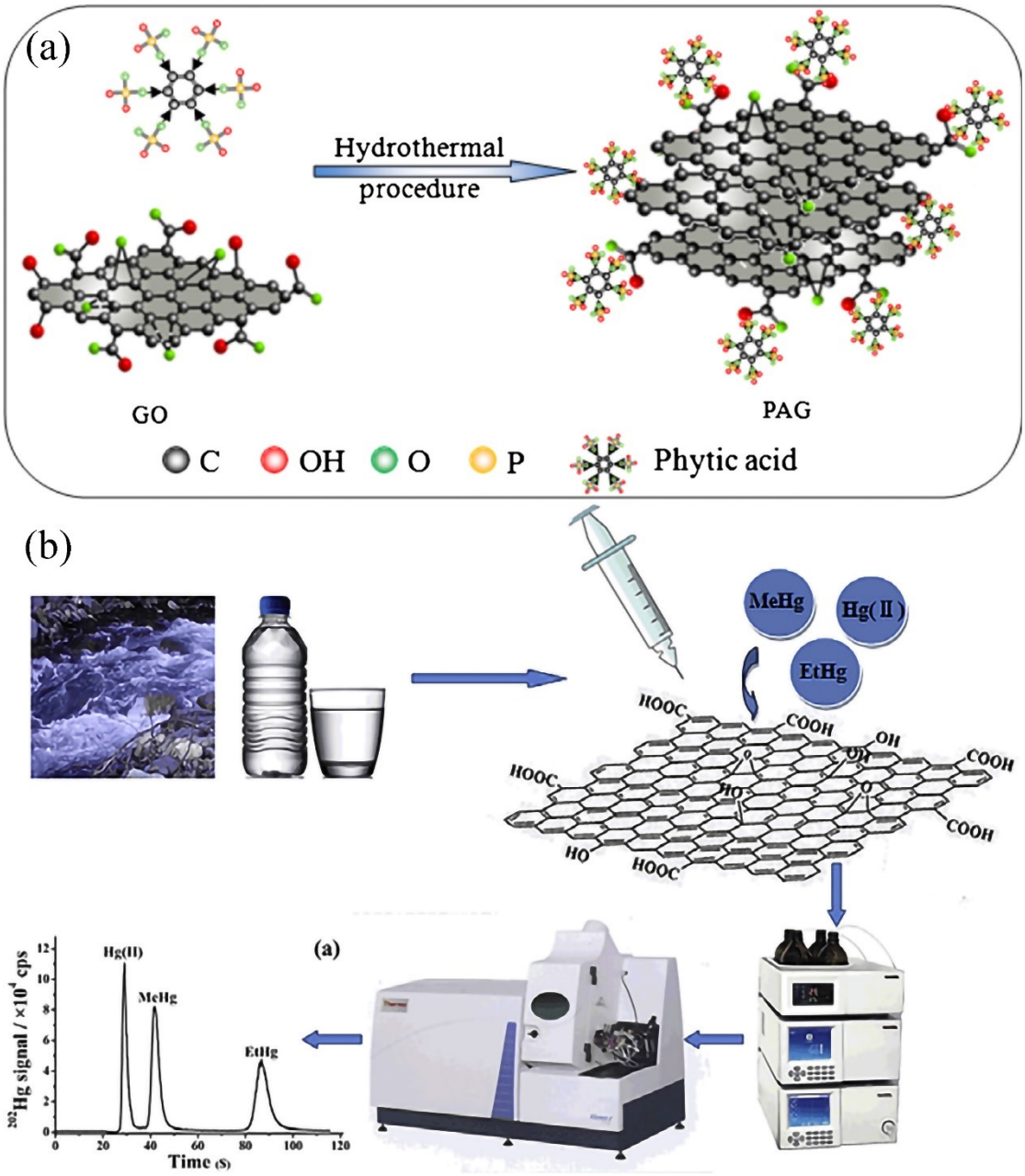

Figure S6 (a) Schematic illustration of the synthetic process of PAG based on GO and PA. Reproduced with permission from ref.[12] Copyright 2017, Springer. (b) On-line solid-phase extraction of Hg(II), MeHg, and EtHg using GO-immobilized SiO_2 particles as the adsorbent. Reproduced with permission from ref.[13] Copyright 2019, Elsevier.

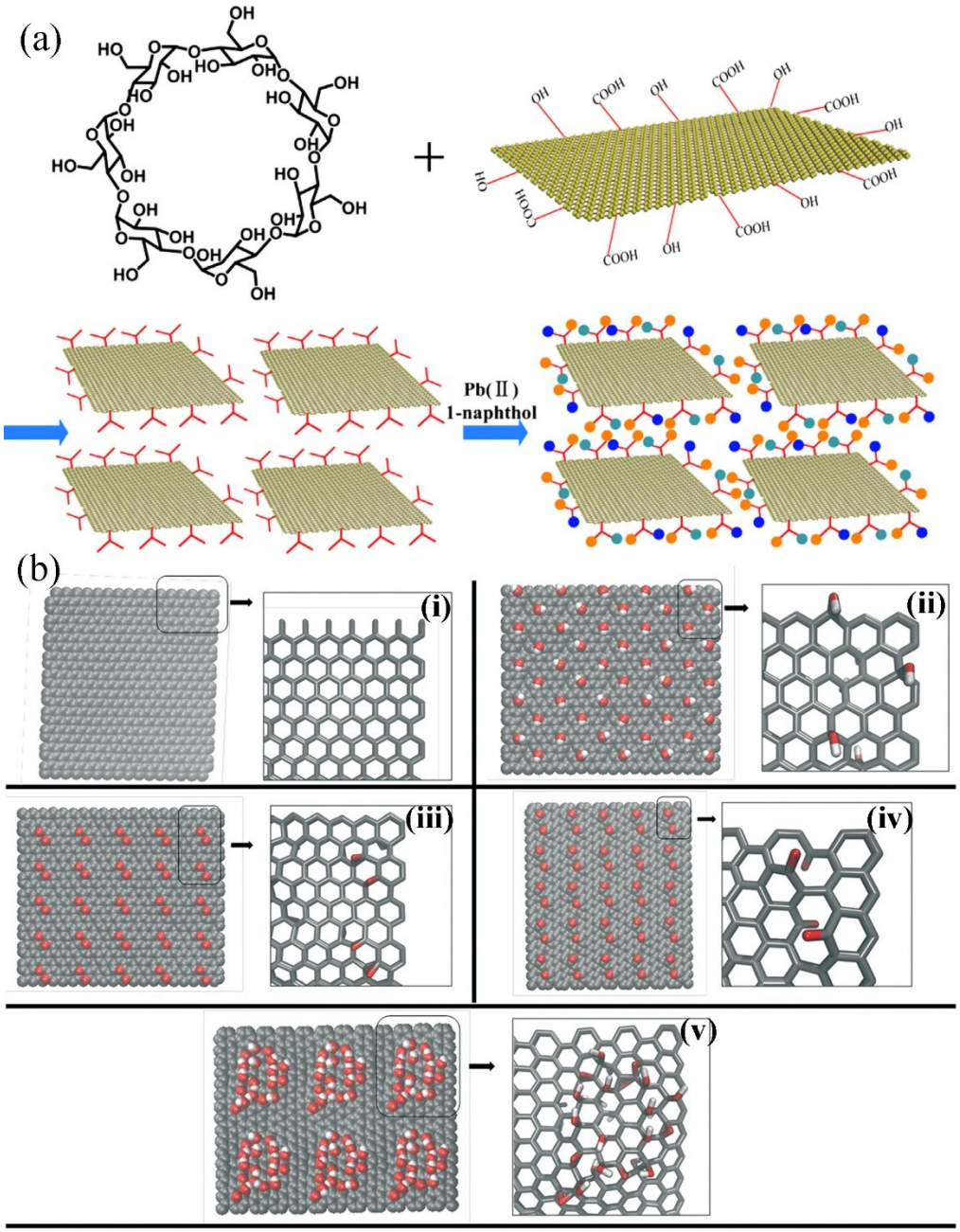

Figure S7. Schematic illustration of the preparation of β-cyclodextrin modified GO and its adsorption interactions with 1-naphthol and Pb(II). Reproduced with permission from ref.[14] Copyright 2018, Elsevier. Structural models of different graphenes, including pure graphene and hydroxyl, epoxy, and carboxyl groups-decorated GO. Adapted with permission from ref.[15] Copyright 2018, RSC.

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