Biocompatible double network poly(acrylamide-co-acrylic acid)-Al^{3+}/poly(vinyl alcohol)/graphene oxide nanocomposite hydrogels with excellent mechanical properties, self-recovery and self-healing ability

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Supporting Information

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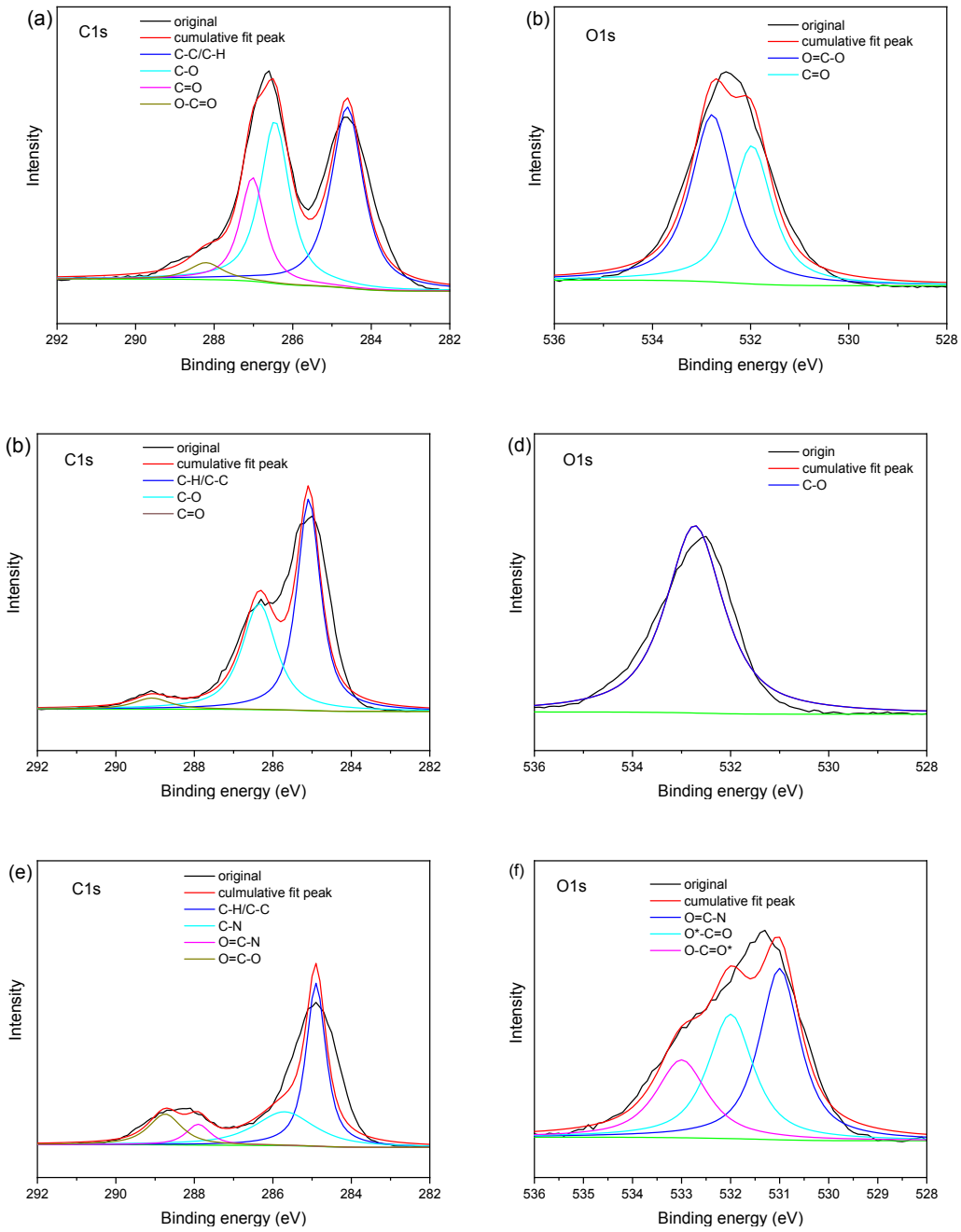

Fig. S1. C1s (a, b, e) and O1s (b, d, f) level spectra of GO (a, b), PVA (c, d) and PAmAA (e, f)

In Figure S1(a), the C1s core-level spectrum of GO could be curve-fitted by the four peaks at the binding energies of 284.6, 286.5, 287.0, 288.2 eV, corresponding to the sp^2-hybridized graphite-like carbon atoms (C=C), sp^3-hybridized carbon atoms (C-C), hydroxyl groups (-C-OH), carbonyl groups (C=O) and carboxyl groups (-COOH) groups, respectively[1,2]. As displayed in Figure S1(b), the O1s core-level spectrum of GO could be fit into two peaks, where the peak at

532.0 eV is assigned to C=O, and the another at 532.8 eV is attributed to O=C-O, carbonyl oxygen atoms in carboxylic groups, esters[3]. The C1s and O1s core-level spectra of PVA are shown in Figure S1 (c) and (d), respectively. The C1s core-level spectrum of PVA shows three peaks at 285.0, 286.4 and 289.1 eV, attributed to -CH_2-, C-O, O-C=O, respectively. The O1s core level spectrum was curve fitted with one peak at 532.7 eV, assigned to C-O[4]. Figure S1 (e) and (f) show the C1s and O1s core-level spectra of PAmAA, respectively. As Figure S1(e), the C1s core-level spectrum of PAmAA shows four peaks at 284.8, 285.7, 287.9 and 288.7 eV, attributed to C-C/C-H, C-N, O=C-N and O=C-O, respectively. The O1s core-level spectrum of PAmAA exhibits three peaks at 531.0, 532.0 and 533.0 eV, assigned to to O=C-N, O^*-C=O and O-C=O^*, respectively[5,6].

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