

## Supporting Information

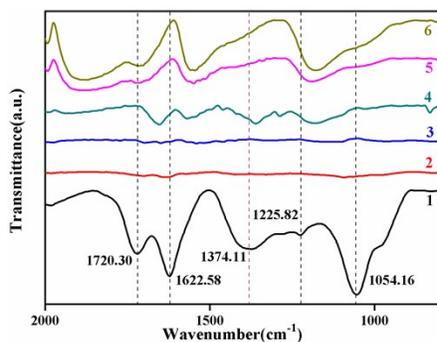


Fig. S1. FTIR Spectra of GO(1), rGH(2), Ag@AgCl(3), AgCl-rGH(4), AgCl@rGO-rGH-1(5), AgCl@rGO-rGH-2(6).

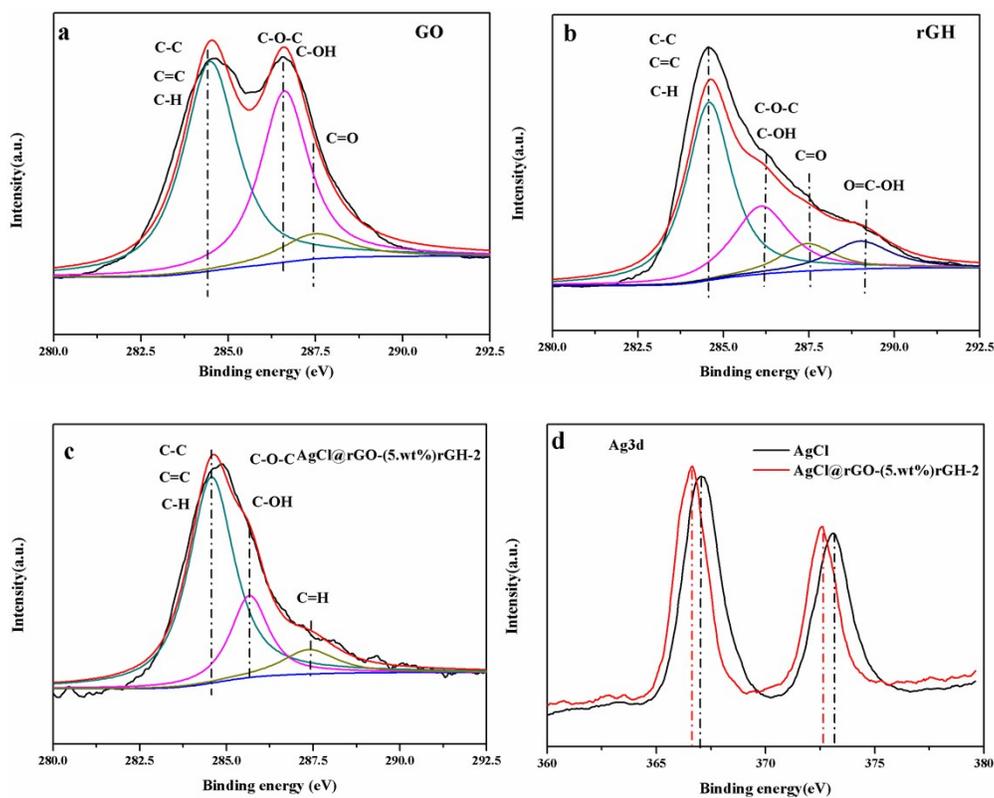


Fig. S2. XPS spectra of C1s in the a: GO, b: rGH and c: AgCl@rGO-(5.wt%)rGH-2; d: Ag3d of AgCl and AgCl@rGO-(5.wt%)rGH-2.

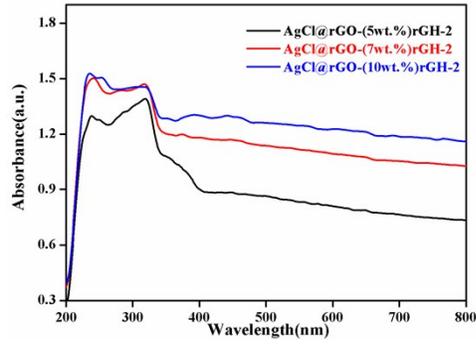


Fig. S3. Uv-vis diffuse reflectance spectra of different ratio of AgCl@rGO-rGH-2

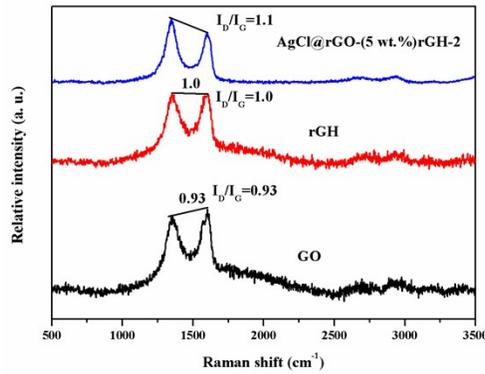


Fig.S4. Raman spectra of the AgCl@rGO-(5 wt.%)rGH-2, GO and rGH.

$$L_a(\text{nm}) = (2.4 \times 10^{-10}) * \lambda^4 / (I_D / I_G) \quad (\lambda \text{ is the Raman excitation wavelength}(524\text{nm in this paper})) \quad \text{Eq. S1.}$$

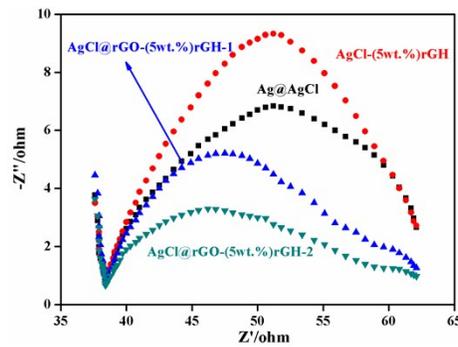


Fig. S5. EIS of different materials in visible light condition

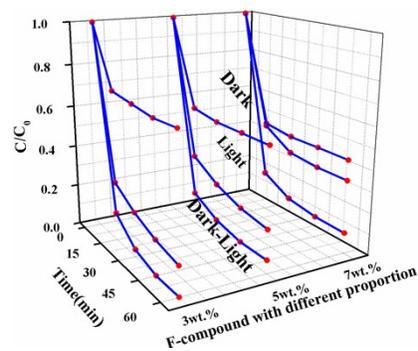


Fig. S6. The photocatalytic degradation, adsorption and photocatalytic degradation together with adsorption cooperative capability cooperative capability of BPA(10ppm,100ml) with different proportion of rGH about AgCl@rGO-rGH-2 (0.1g)