Supplementary Information File

Electronic structure and ultrafast charge transfer dynamics of phosphorous doped graphene layers on copper substrate: A combined spectroscopic study

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This Supporting Information is composed by one section:

1. Equation for quantification of the phosphorous element in GP/Cu graphene.

2. Supporting Figures (Figure SI1).
Figure Captions

**Figure SI1.** High resolution P2p XPS spectrum of GP/Cu (right) graphene layer. The two features used in the fitting procedure are also shown.
Equation for quantification of the phosphorous element amount in GP/Cu graphene.

The amount of P in the graphene film is determined from high resolution P 2p show in Figure SI1 and using the following equation.

\[ X_i = \frac{100(A_i)}{\sum_{j=1}^{m} A_j} \]

The \( A_i \) represents the peak intensity in this case corresponding to P 2p XPS spectrum.
Figure SI1. High resolution P2p XPS spectrum of GP/Cu (right) graphene layer. The two features used in the fitting procedure are also shown.