

## Characterization of pre-transfer functionalized graphene

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### Abstract

Large area graphene was successfully covalently functionalized with p-aminophenyl (AP) and p-(N-maleimido)phenyl residues (MP) from the respective diazonium salts, prior to transfer. The success of the functionalization was confirmed by Raman backscattering spectroscopy and infrared spectroscopic ellipsometry (IRSE). Furthermore, we have investigated the thickness and spatial distribution of the MP residues, using infrared spectroscopic ellipsometry and infrared atomic force microscopy, prior and after the transfer process. The data show consistently a MP layer thickness of 4.5-4.8 nm. Both functionalizations were used for subsequent modification with either carboxylic acids (AP-functionalized) or thiols (MP-functionalized). Furthermore, functionalized graphene sheets were transferred to various substrates, including glass, SiO<sub>2</sub>, PTFE tape and aluminium foil. Considering the variety of available diazonium cations and possible further modifications, this opens the possibility to the use of modified graphene as tailored modular building block for specific surface functionalization.

### References

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