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Sommario/riassunto	This PhD thesis presents the latest findings on the tunable surface chemistry of graphene/graphene oxide by systematically investigating the tuning of oxygen and nitrogen containing functional groups using an innovative carbonization and ammonia treatment. In addition, novel macroscopic assemblies or hybrids of graphene were produced, laying the theoretical foundation for developing graphene-based energy storage devices. This work will be of interest to university researchers, R&D engineers and graduate students working with carbon materials, energy storage and nanotechnology.