

Abstract Submitted
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Graphene Synthesization by Direct Sonication Exfoliation¹

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— The emergence of graphene in the scientific community over the last several years has been the cause of much excitement among material scientists and physicists due to its many unusual physical and photovoltaic properties. However, the much sought after monolayer graphene has proven to be difficult to produce in sufficient quantities, with most processes outputting high layer or even defect ridden graphene instead. This experiment aims to correct some of these problems, concerning itself with the synthesis of high quality graphene through continuous sonication with surfactant added throughout, as well as the issue of graphene quality as a function of sonication time. This was accomplished through the creation and addition of a Triton X-100 surfactant solution to a graphite suspension during sonication lasting for 50, 80, 110, 140, 170, and 200 minutes. The resulting suspension was then filtered to separate out the graphene, before being tested for quality through Raman spectroscopy and SEM microscopy. This completely physical method of graphene synthesis provides a much simpler and more environmentally safe way to achieve the highly desired few layer graphene, and will hopefully allow for greater use of the substance in industry.

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