Senior Research Presentation

Charles Brecht

Numerical simulation of Graphene Electric Fields on Silicon Wafers and their potential applications to current and future life science technologies

This study aimed at determining the Electric fields in the presence of graphene by compiling samples in the laboratory and laying them on silicon oxide wafers. A potential was later set across these samples and then starting with an analytical solution to the potential distribution across the samples, we use the Maple modeling software to numerically estimate the electric field. Graphene samples were prepared by mechanical exfoliation of graphite and the most transparent samples were isolated as the most pure form of graphene. This purer form of graphene was observed and the potential was extrapolated using the Maple software. The hope is that the observed electric fields will provide more information about grapheme which is necessary for further use in the development of technology that could greatly improve the quality of life.