Applications of MoS_2 as a Two-Dimensional Material Beyond Graphene

Kraig Andrews*
Wayne State University Department of Physics and Astronomy
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An article usually includes an abstract, a concise summary of the work covered at length in the main body of the article.

I. INTRODUCTION

The study of nanomaterials is wide-reaching and overlaps many different disciplines of scientific research, from physics to chemisty, materials science, and biomedical engineering, for example. In the past decade research focusing on two-dimensional materials has rapidly increased compared to previous decades. This swift jump in the amount literature and studies being done on various two-dimensional materials is due to several breakthroughs which occurred in the mid 2000s, the resulting properties of such materials, and their possible and numerous applications which are many sweeping across a wide-range of disciplines both academic and commercial. The major breakthrough that spurred the plethera of research and interest that now exists on two-dimensional materials and its uses was isolation of a monolayer of graphene. In 2004 Geim et al. were able to isolate a graphene sheet for the first time [3, 4]. Graphite's existence had been known for several centuries prior and was applied in some mechanical settings [2]. However, it was not until 1985 and the discovery of fullerenes (C_{60}) that there was thought to be the possibility of interesting and beneficial properties of this structure and its subsequent derivatives, assuming that it could be synthesized in large quantities [1].

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* kraig.andrews@wayne.edu