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## GRAPHENE IN THE DEFENCE INDUSTRY

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The defense industry is a strategically important sector and a major employer in Russia. It is also a significant player in the global arms market, with the Russian Federation being the second largest exporter of military products. The object of our research is the application of graphene in the defense industry. This topic is more relevant than ever, because graphene makes it possible to create not only new effective and destructive weapons, but also many other things.

Graphene is a two-dimensional allotropic modification of carbon formed by a layer of carbon atoms one atom thick. Graphene exhibits specific, in contrast to other two-dimensional systems, electrophysical properties. Graphene was the first elementary two-dimensional crystal to be produced.

The material was discovered, isolated and characterized in 2004 by Andre Geim and Konstantin Novoselov, scientists at the University of Manchester, who were awarded the Nobel Prize in Physics in 2010 for their research into the material.

This material is used in various branches of the military-industrial complex: aviation industry, munitions and special chemicals industry, conventional weapons industry. The use of graphene improves aerodynamic properties of aircraft and, as a result, saves fuel. Military vehicles can potentially become undetectable to hostile radar devices, when graphene is applied to their surface. This is an obvious and significant combat advantage. At the same time, the general military equipment built with graphene benefits from reduced overall weight and increased flexibility. In addition, graphene has been proved to withstand the lightning. It significantly improves the mechanical characteristics of the composite material and minimizes the effect of bullets on body armor and helmets [1; 2].

The only problem is the costly production of this material. There is a need to study graphene more closely and find cheap ways of mass production it in order to unlock its full potential [3].

### References

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