Application of light-weight materials for ballistic protection (AVT/BGR-GBR/15-01)



A joint study between scientists from Bulgaria and the UK, in which techniques for assessing lightweight materials for personal protection are examined, has just enriched the CSO project portfolio. It will use analytical capabilities in Edinburgh and testing capabilities in Sofia to provide improved understanding and materials to protect active servicemen.

Most ballistic protection consists of a combination of different material, such as composites, metals, ceramics, aramids, textiles, cellular or porous materials combined with other additive materials. The combination and arrangement of these materials in different configurations and layouts is what ensures the ballistic protection for vehicles and personnel. High levels of protection can sometimes only be achieved at the cost of increasing the weight and consequently the cost of the armor system. The use of novel light-weight materials and material systems, and their combination with other denser materials is a path to ensure an increase in protection while maintaining comfort.

In this study Edinburgh provides capabilities for the analysis of the test results for the response of materials while Sofia provides systematic testing facilities. The combination will permit systematic testing and analysis in ways not normally undertaken, and provide a faster and more effective route to improved protection. The two member nations have complementary capabilities and will exploit these firstly for a novel approach and secondly for their mutual education. This will provide new options for the study of materials as well as the refinement of academic models required for the development of real-world applications.