



Ballistic ceramic with single cristal alumina fibers

Carmen Cerecedo

Neoker produces single crystal alumina fibers, NKR®, a new ceramic material of high performance in composite materials. The fibers are used mainly as reinforcing phase added in composite materials: ceramic, metallic and polymeric matrix.

In our constant search of new applications, Neoker pursues new products. Therefore, we research and develop new sintering technologies, as for example Spark Plasma Sintering, (SPS). The combination of SPS sintering route with the use of our NKR fibers will lead to new concepts in CMC's.

One of the main applications regarding to the improvement in mechanical properties is in the ballistic sector. In one of our latter developments, recently carried out, we have demonstrated that adding small percentages (even below 1%) of our NKR fibers in ceramic matrixes, it may be obtained outstanding mechanical performance. Specifically, it has been shown that after a ballistic impact, the damage is limited to reduced areas, thus increasing the multiimpact resistance.

In this work they are described the main results obtained so far, mainly focused in the improvement of ballistic performance in fiber reinforced ceramic armours, both after single impacts and after multiimpact essays. All these achievements enable the design of new protective components with weight/thickness reduction up to 30%.

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