Graphene history – from lab weirdo to breakthrough in industrial innovation

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Graphene is a robust, flexible sheet of carbon atoms, one-atom thick.

At the beginning of its exciting life, graphene was mostly a game for physicists working in fundamental research, enabling them to investigate relativistic quantum phenomena in benchtop experiments with samples made using simple scotch tape.

In 2008, techniques to produce graphene on large scale were invented. In 2012, the first consumer products appeared. Since then, the EC decided to launch an ambitious project (The Graphene Flagship), with the visionary goal to translate this scientific breakthrough into innovation for European industries.

Nowadays, graphene-based materials are produced on the tons scale, and are used in different applications, mostly in composites, with some applications in electronics and energy storage already mature, and several major companies active in the field.

However, the true potential of graphene to give breakthrough applications has not been exploited yet, and major challenges to large-scale industrialization are still present, due as example to excessive hype and lack of quality control.

In this talk, I will present some of the latest results and most promising applications that we are developing to achieve this objective, using graphene-based composites for the aerospace, automotive and biomedical sectors.