# FIBRE REINFORCED COMPOSITES WITH A NANOSTRUCTURED POLYMER MATRIX – OUTLINE FROM PROPERTIES TO APPLICATION

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Fibre reinforced composites are under intensive investigation for more than 40 years. The ECCM conference series started in 1985 and formed a European forum for science and development on this evolving field of research.

Besides, composite materials have already gained an increasingly high standard, which results in the application in the aerospace industry, there is still room for further improvements. These developments go towards further cost reduction during material production, manufacturing, and also in course of application. In the area of materials, there had been strong improvements in the development of nanocomposites (polymers filled with nanoparticles as $SiO_2$, carbon nanotubes, graphene, etc.). Nanocomposites used as matrix for fibre reinforced composites have the potential to improve overall mechanical properties as fracture toughness, first ply failure, impact etc. Other important properties can also positively be influenced, as electrical and thermal properties.

Within this presentation we will give an overview on the development of nanocomposites, its integration into fibre reinforced polymeric structures and the gain in overall properties, so that the composite materials can even better compete with conventional materials, respectively are an even more attractive alternative.