

SUMMARY

The main aim of this work is to provide integral methods to predict and characterize the properties of composite structures based on hybrid polymers and reinforcements, that could lead to useful results from an industrial point of view. This is addressed, if possible, by theoretical predictions of the effective properties by using the available experimental data.

The first part is focused on the scientific achievements of the author that allowed a quantitative characterization of the main effective properties of several composite architectures from hybrid polymers and reinforcements, based on bio matrices, tailor-made matrices and different theoretical and simulation methods using computer software to allow good comparison. The second part defines the future research lines to continue this initial investigation.

The main objectives are clearly defined to give the reader a sound background with the appropriate concepts that are specifically discussed in the following chapters. As a main objective, this research work makes a first attempt to provide a systematic analysis and prediction of composite hybrid structures.