*Abstract*

Over the last thirty years, composite materials, plastics, and ceramics have been the dominant emerging materials. The volume and number of applications of composites have grown steadily, penetrating and conquering new markets relentlessly. Modern composites constitute a significant proportion of the engineered materials market ranging from everyday products to sophisticated niche applications.

The field of composite materials science, relies heavily on experiments and simulation-based models in order to better predict their characteristics and discover new materials with improved properties. Lately, the “big data” generated by such experiments and simulations has offered unprecedented opportunities for application of data-driven techniques in this field, thereby opening up new avenues for accelerated materials discovery and design.

In this project, we have developed algorithmic frameworks for predicting properties of composites to aid in the meta-modelling process and in advancing the automated extraction of useful information from simulated data to make predictions at scales that are currently inaccessible. The frameworks designed are applicable to virtually any new composite. They have been designed in a way that allows instantaneous recommendation of composite materials and prediction of their aggregate properties.