**Siva Bohm**

TATA Steel R&D and IIT Bombay Honorary visiting Professor
UK

siva.bohm@tatasteel.com

# Graphene based Coatings against Corrosion

Energy & Environment are key areas of technology, where TATA Steel addressing significant interest. Tata Steel Europe has the capacity to produce up to 1.3MT of organic coated steel each year which is used in many applications, from composite panels for construction applications through to domestic appliances and automotive sector. To be the market leader in the coil coating, TATA Steel needs to utilise advanced technology for meeting customer satisfaction as well as comply with environmental legislations and energy savings.

$Sp^2$ hybridized graphene is a two dimensional material in which all the carbon atoms are structured hexagonally and considered as the next-generation materials for nano electronic devices due to its unprecedented properties such as high carrier mobility's (200 000 $cm^2/V$ ), high surface area 2630 $m^2g$. However, increasing layer thickness of graphene decreases the quality of graphene as van der waals forces hinder the superior properties of graphene. On the other hand, the difficulties arising from fabrication of large-area-mono/few layers graphene is impeding its application. Therefore, novel coating techniques should be developed in order to control the thickness of graphene.

In this talk, industrial viable route & exfoliation of Graphite to Graphene composite in advanced metal coating Tata Steel patented technology will be discussed. Funcitonalisation of the particles make them easily dispersable in the organic coating formulation. Anti corrosive coatings for industrial perspective will be discussed.