Development of Fe-TiC composites by SHS (NMR-SHS) Technology

A new **innovative** method for preparation of **Fe-TiC composite** material **by SHS** technology has been adopted & **established at NMRL**. In this process, TiC formation is in-situ during SHS reaction and thereby provides formation of finer particles with a cleaner particle/metal interface compared to conventional metal-ceramic composite materials made by powder metallurgical techniques using separate metal-ceramic powders in ex-situ manner. The processing time is also very short to the tune of few seconds compared to hours to days in the case of powder metallurgy techniques. This rapid reaction SHS processing is basically an intelligent way of utilizing high heat release of exothermic reactions through direct aluminothermic reduction of less expensive oxides of iron and titanium. With suitable addition of carbon & flux, the molten Fe-TiC MMC can be directly cast into near net shapes.

Salient Features :

- ❖ High Heat Contains
- ❖ Superior Combination of Properties,
- ❖ Excellent Wear and Erosion Resistance
- ❖ Excellent Sea Water Resistance
- ❖ High Temp. Oxidation Resistance
- ❖ Directly Cast to Near Net Shape Products
- ❖ Elimination of Expensive Equipment Coupled with Time
- ❖ Energy Saving