

## Microstructural characterization of gray cast iron

**J P Arul Mozhi Varman**  
Indian Institute of Technology, India

The difficulty in the metallography of gray cast iron lies in the differentiation of ferrite and iron phosphide eutectic (steadite) microconstituents by using normal etchant like nital, picral and both these phases appears as bright under normal light microscope. Hence, it is difficult to find out the relative amounts of phases, either photo micrographically or using sophisticated image analysis software. On the whole, the samples are etched with 2% to 3% nital for quantification of ferrite, steadite, cementite, and carbides under optical (light) microscope. This method of inspection requires high skill to differentiate the ferrite and iron-phosphide eutectic (steadite) microconstituents and also sometimes it leads to misinterpretation. This led to the development of a novel etching development called selenic etchant in which the steadite and ferrite constituents are differentiated at 100 % confidence level and the precise calculation of the fraction of phases also done.

### Biography

J P Arul Mozhi Varman has completed his B.E. Metallurgy at the age of 22 years and currently studying M.S. in metallurgy & Materials science engineering at Indian Institute of Technology-Madras, India. He has 4 years of automotive industry exposure pertaining to the development of casting and forging parts. He has published few national and international papers and one of the recipients of International Metallographic contest award winner by holding second prize, and appreciated as young innovator honored by LRAMP, USA & IIT-Madras. He is the member of Indian Institute of Metals, TMS & Materials Advantage chapter, etc....

[aruliitm2010@gmail.com](mailto:aruliitm2010@gmail.com)