

## The effect of coconut shell charcoal and sintering temperature on the properties of iron ore pellets

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Dela iron ore, coconut shell charcoal and Aruwakkalu lime are some of the raw material resources in Sri Lanka for iron making. However, proven reserves of iron ore deposits in Sri Lanka have not been scientifically estimated as yet. There is no indication of the occurrence of coal deposits in Sri Lanka for the utilization to produce iron using the blast furnace. Therefore, it is important to investigate the possibility of producing high quality iron ore pellets using locally available resources for the utilization as a substitute for sponge iron, which is imported. In this study it is attempted to optimize composition and sintering temperature of iron ore pellets which are having the best properties, using the Dela iron ore, lime and coconut shell charcoal. Different combinations of pellets are prepared by changing Coconut shell charcoal percentage and sintering under different temperatures while lime content is fixed. The pellets which are having optimum properties such as Compressive strength and Porosity are selected and it has been observed the most suitable combination for reducibility.

### Biography

S. P. Guluwita has completed his B.Sc. engineering degree at the age of 27 years from University of Moratuwa, Sri Lanka and M.Sc. degree from University of Peradeniya, Sri Lanka in year 2000. Now he is reading (has to submit the thesis) his MPhil degree at University of Moratuwa. He is the lecturer of University of Moratuwa, Sri Lanka.

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## Development of multi layers barium hexaferrite based radar absorbing materials

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This work was carried out as integral part of project to develop multilayer RADAR absorbing materials for stealth technology. The aim of this study is the fabrication of flexible multi layer structures materials based on epoxy resin matrices impregnated with barium hexaferrite (BaHF), doped barium hexaferrite (CoTiMn-BaHF), titanium dioxide and conducting carbon black (CCB). The top layer of the multilayer composite act as impedance matching layer consists of hexaferrite (30 wt%) and titanium dioxide (5 wt%). The bottom layer of the multilayer composite act as conducting layer consists of hexaferrite (30 wt%) and conducting carbon black (5 wt%). Both the layer combined together and total thickness of the composite absorber maintained at 2 mm. This flexible absorber has application to reduce reflectivity from the target. The morphology of filler particles were characterized by using field emission scanning microscope, distribution of filler particles into matrix studied with scanning microscope. Interaction of microwave with the multi-layer composite was studied for the attenuation in terms of reflection loss (RL) within the X-band region. The result shows that reflection loss values achieved by the barium hexaferrite based absorber -32 dB at 10.64 GHz and doped barium hexaferrite based absorber -29.56 dB at 11.7 GHz. Consistence in reflection loss value (>-24 dB) was observed for doped barium hexaferrite based RADAR absorbing materials within the entire bandwidth.

### Biography

Sukanta Das has completed his M.Tech. from Indian Institute of Technology, Kharagpur India. He is working as Scientist 'D' in Defence Research and Development organization (DRDO), India. He completed his project in "Microwave absorbing materials in X-Band region". He is the member of "High Energy Materials Society of India" and "Materials Research Society of India". He has ten years working experience in the field of High energy materials and RF hazard safety.

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