J Material Sci Eng 2013, 2:4
http://dx.doi.org/10.4172/2169-0022.S1.012

OMICS Group Conferences
Accelerating Scientific Discovery

2nd International Conference and Exhibition on
Materials Science & Engineering

October 07-09, 2013 Hampton Inn Tropicana, Las Vegas, NV, USA

The effect of sawdust on the properties of Dela iron ore pellets

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Iron ore are used to extract iron. For effective extraction process, the ore is subjected to agglomeration. Pelletizing is the one most commonly used agglomeration method in the world. Normally pellets are prepared using iron ore, binder and coke or coal. Sawdust is a waste product of the furniture industry. Teak wood and mahogany wood sawdust are widely available in Sri Lanka. In this study, teak sawdust was used to obtain porosity in pellets instead of coke. It is a combustible material at lower temperatures of approximately 200˚C. The effect of sawdust was studied on the compressive strength, porosity and reducibility of the prepared pellets. By this study it was found that lower amounts of sawdust with high sintering temperature gives the optimized properties for the pellets prepared with Dela iron ore.

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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Assessment of the degree of mesoporosity in carbon produced by Direct carbonization of used cigarette filters

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Porous carbons have been used in a wide range of industrial or scientific fields. They have been generally utilized in separation processes as adsorbents, catalysts and catalytic supports and in electrical and energy storage devices. Amongst current fabrication methods, pyrolysis of a carbonaceous material is the most direct technique inthe production of porous carbons. Cigarette filters, consisting of 95% cellulose acetate fibers, are one of the largest solid wastes today. Approximately 766,571 metric tons of cigarette ends are littered every year in the world. This volume of cigarette butts thrown away every year poses a critical challenge for disposal strategies. Cigarette butts are known to be of toxic and hazardous waste. Various proposals have been practiced to prevent cigarette butt pollution, but none has been efficient so far.In this work, a simple one-step carbonization of cigarette filters under various operational parameters has been used in order to produce porous carbon. The effects of carbonization temperature on the degree of the mesoporosity of the final porous carbonproducts has been studies. Adsorption-desorption isotherms, scanning electron microscopy (SEM), Energy-dispersive X-ray spectroscopy (EDX) have been employed to characterize the final carbon product.

Biography

Salman Masoudi Soltani received his M.S. in chemical engineering from Iran University of Science & Technology (IUST) in 2008. He is currently a Ph.D. research candidate in chemical engineering at the University of Nottingham, Malaysia Campus.

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