EXTRACTION OF SILICA FROM RICE HUSK ASH

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ABSTRACT

Rice is one of the major crops grown through the world. Rice husk is an agricultural residue abundantly available in rice producing countries. Rice husk is generally not recommended as cattle feed since its cellulose and other sugar contents are low. Silica is the major constituent of rice husk ash varying from 85-95%. With such a large ash content silica content in the rice husk it becomes economical to extract silica from the ash, which has wide market also addressing the rice husk and its ash disposal.

INTRODUCTION

Silica (SiO_2) is one of the valuable inorganic multipurpose chemical compound. Manufacture of pure silica is energy intensive. In our Project, a simple chemical process is described which uses a non-conventional raw material rice husk ash for extraction of silica, one of the valuable inorganic multipurpose chemical compounds. Current environmental and economic conditions encourage us to develop and improve technology to reduce or utilize the agricultural waste in the best possible way. One of these wastes is rice husk. Asia is the biggest zone for rice production (around 90%) in the world. Rice mills produce bulk amount of rice husk as a by-product which is used as a fuel by the industries to generate energy. Other than its fuel importance, researcher says that rice husk contains high amount of silica in the form of rice husk ash.

METHODOLOGY

1. RICE HUSK ASH PREPARATION;

The collected rice husk were washed to remove impurities. They were dried I hot air over for 24h.

2.ACID WASHING;

This has done o remove impurities. 10g of RHA was washed with 100ml of 2M HCL The solution was shacked for 2h..

3.ALKALNE SOLUBILIZATION;

100ml of 1N NaOH solution was prepared to wash RHA samples and was stirred in water bath at 80C. After constant stirring the solution was filtered through whatman no 42 ash less filter paper, the carbon residue were washed with 100ml distilled water.

4. ACID TITRATION TO FORM GEL PRECIPITATES

The solution formed above is titrated with 2M HCL. Silica gel start to precipitate. Distilled water is added to gel and gel were broken into slurry type solution. The slurry was centrifuged ad solid gel gets separates out. It is dried for 12 hours to form xerogels.

RESULT

Silica obtained from rice husk was white in color. Minimum number of contaminants Ca, Mg, K, Sulphur were found. The purity of extracted silica is above 85-90% with some sodium impurity present inside.

CONCLUSION

Rice husk is not just a waste material but more than that thus instead of just disposing it off one can add value to it. By effectively utilizing silica content present in it and to produce precipitated silica from it. From the experiment, it has been observed that the approximately more than 90% of SiO2 is recovered.

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