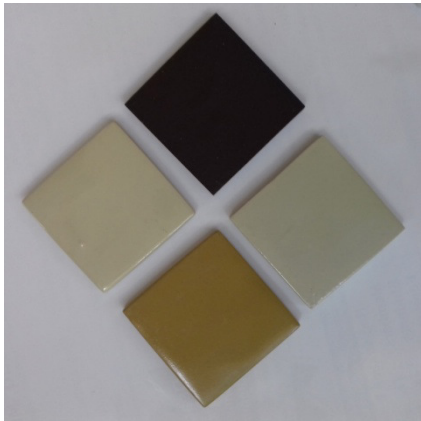


A product of IGCRT, BCSIR

Ceramic stain is used in porcelain bodies which are made using various metal oxides with firing. The prepared stain is cost effective and environ-mental friendly

Ceramic stain is used to apply color in porcelain materials and decoration of ceramics.



Glass- Ceramic Tiles

The Process is used for production of glass ceramic which is used to cover the floor, wall and facade of building.

Major Raw Materials :

Rice Husk Ash, Fly Ash, Waste Iron, K-feldspar and Waste glass, (Soda lime)

Water Purification Filter

দূষিত পানিকে জীবানু, ময়লা, আয়রন মুক্ত করে,

খর পানিকে মৃদু পানিতে রূপান্তর করে এবং

উপকারিতার তুলনায় দাম খুবই কম।



Shawdesh Household Arsenic Removal Filter

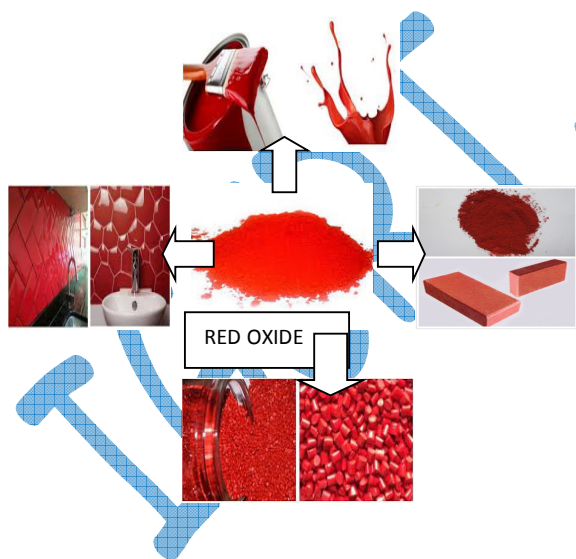


Arsenic contaminated water poured into the bucket. Required amount of oxidizing agent mixed with it, and then it is vigorously stirred. Then it is settled for an hour. The process is an efficient technique for removal of arsenic and can be applied in both domestic as well as at community level as it requires no electricity.

Project Associates

Dr. AJM Tahuran Neger CSO and Ex-director, IGCRT
Md. Lutfur Rahman SO, IGCRT

Low cost red oxide from mill-scale



The wastage mill-scale is the flaky outer surfaces of plates, sheets or profiles when they are being produced by rolling red hot iron or steel billets in rolling or steel mills. In this project, mill-scale is converted to red oxide at low cost.

Application: Red oxide is most commonly used with cement for flooring with red color. It is widely used in all kinds of paints, such as house paints, floor paints, stains, enamel etc. It is also used as a pigment in tiles, floor tiles, flooring products, ceramics, pottery, undercoat & powder coating and others. The demand of Red Iron Oxide pigment in Bangladesh is nearly 3000 MT per year.

Project Associates

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Production of zinc oxide from zinc dust



Project Associates

Huge amount of zinc dust are producing from galvanizing industry as by-product during drying the metal sheet or rod by hot air after galvanizing. In this process zinc is leached out with acid. After removing impurities, zinc is precipitated and converted to zinc oxide.

Application: Zinc oxide has many applications in Pigments, Paints, Plastic & Rubber Industry, Textile industry and Tiles & Ceramic Industry. It is also used in photo catalysis, electronic and electro technology industries. The demand of zinc oxide in Bangladesh is over 10,000 Tons per year.

Dr. AJM Tahuran Neger, CSO and Ex-director, IGCRT

Md. Lutfor Rahman, SO, IGCRT

Production of Zinc Sulfate from Zinc Ash



Project Associates

A total of 128 rolling mills are currently running in Bangladesh, which are producing a large amount of zinc ash as an waste materials. Zinc is extracted from zinc ash with acid and followed by neutralization. The solution is then concentrated and crystallized as zinc sulfate.

Application: $ZnSO_4$ used as a coagulant in the production of rayon. It is used to supply zinc in the animal feeds, fertilizers and agricultural sprays. It is also a precursor to the pigment lithopone and also used as mordant, analytical reagent, electrolytes for zinc plating, mordant in dyeing, preservative and in paint and varnishes and so on.

Dr. AJM Tahuran Neger, CSO and Ex-director, IGCRT

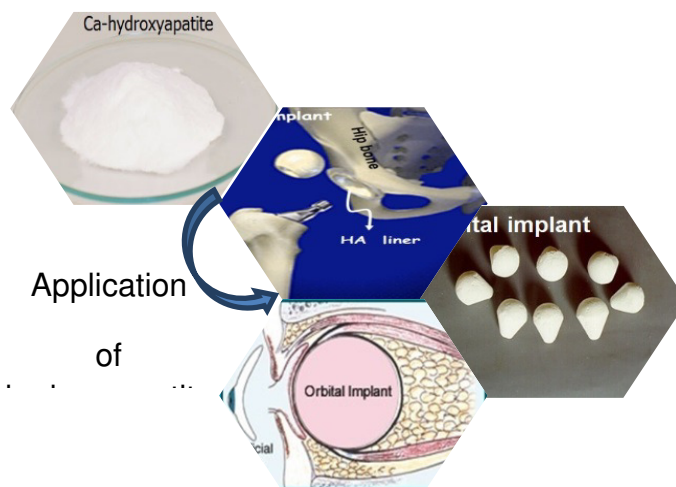
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Products of GRD



Ca-hydroxyapatite (HAP) – widely used bio-ceramic material

Salient features:

Calcium Hydroxyapatite [HA , $\text{Ca}_{10}(\text{PO}_4)_6(\text{OH})_2$] plays an important role in biomedical field because of its chemical similarity to bone. Hydroxyapatite is a highly biocompatible material which is being used for coating on metallic implants, as a porous ceramic that favors bone ingrowths, to fill small bone defects & for tissue engineering scaffolds.

Specific application:

HAP is being used as a biomaterial in various applications (e.g., artificial bone and dental root, cosmetic foundation, *etc.*).

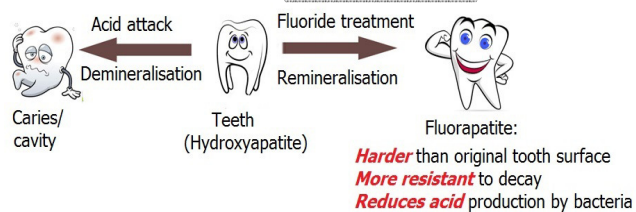
Research Associates:

Dr. Samina Ahmed, PSO

HumayunKabir, SO

Farah Nigar, SO

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Fluoroapatite(FHA)- is being used in dentistry field due to its extensive performance in preventing dental carries

Salient features:

Demand of fluoroapatite (FHA) is increasing day by day and so far we know that in our country, FHA is being imported which costs lot of foreign exchange. Considering these facts, a process has been developed to prepare fluoroapatite using waste eggshell as the prime source of calcium.

Specific application:

FHA is being used in dentistry field due to its extensive performance in preventing dental carries

Research Associates:

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Superplasticizer- a water soluble resin widely used as an admixture to enhance the fluidity of concrete.

Salient features:

- Higher workability
- Enhance strength
- Increase durability
- Resist corrosion

Specific application:

Superplasticizer plays a positive role in maintaining high fluidity of concrete. Applications are very much important to the production of high performance concrete (HPC).

Research Associates:

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Name of the Unit: Institute of Glass & Ceramic Research and testing (IGCRT)

Name of the Division: Inorganic Pigment and Chemical Research Division

Process ready for lease out

SI No.	Title	Description
--------	-------	-------------

- | | |
|-----|---|
| 01. | Preparation of low cost transparent glaze for the decoration of earthenware (pottery) body. |
|-----|---|



This low temperature transparent glaze can be used by the potters to enhance the strength and beauty of the products. This glaze is also environment friendly as it is lead and cadmium free.

Process Associates

1. Shahana Afrin, Ex-Director, LRI, BCSIR
2. Shahnaj Parveen, Rtd. CSO, IGCRT, BCSIR
3. Dr. Shirin Akter Jahan, SSO, IGCRT, BCSIR
4. Mr. AKM Manjurul Karim, JEO, IGCRT, BCSIR
5. Dr. M. Sanwar Hossain Mondol, Ex-Director, IGCRT, BCSIR

- | | |
|-----|---|
| 02. | Production of ceramic red brown stain for the decoration of ceramic ware. |
|-----|---|



Ceramic products are decorated with various ceramic stains to make it attractive as well as to increase the market value.

Process Associates

1. Shahnaj Parveen, Rtd. CSO, IGCRT
2. Dr. Shirin Akter Jahan, SSO, IGCRT
3. Mr. AKM Manjurul Karim, JEO, IGCRT

Refractory and Structural Ceramic Research Division

Long life Treated Bamboo (Preservation of Bamboo by chemical treatment)



Associate Scientist:
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 Dr. Umma Sarmeen Akthar
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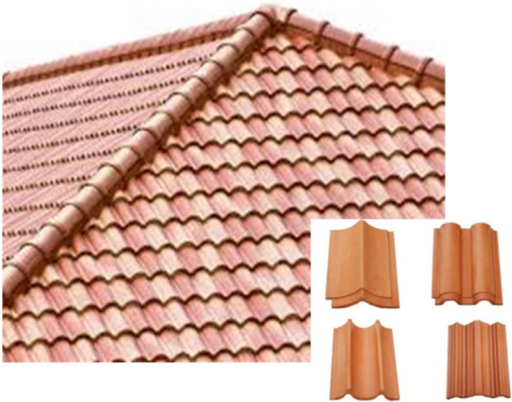
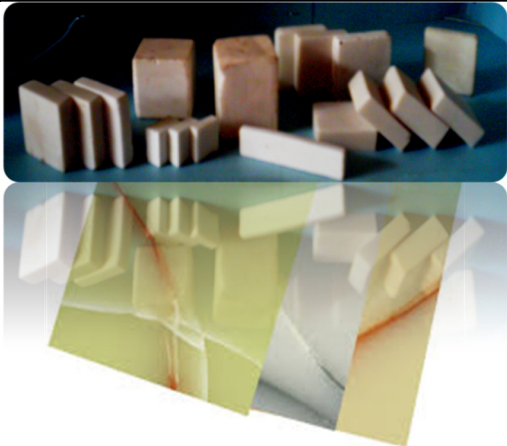
- In this process, the raw bamboo is put in a chemical mixture for 8 days and after then the bamboo is dried in sunlight.
- After proper drying this bamboo can be used in nonstructural construction like Hut, low cost building materials, Furniture, Showpiece etc.
- After the chemical treatment, the longevity of bamboo rises around 50 years from 1 to 3 years for normal bamboo.

Energy Efficient brick (Production of Energy Efficient brick utilizing industrial waste)



Associate Scientist:
 Md. Sagirul Islam
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- It saves near about 200°C temperature from conventional brick firing temperature.
- In this process glass waste (Cullet) and red clay is mixed in the proper ratio and fire at a certain temperature to make brick. The produced brick from this process can gain high compressive strength and energy efficiency.
- It saves approximately 50% clay from conventional brick.
- It has higher compressive strength than conventional brick.
- It is eco-friendly and cost effective.

<h2 style="text-align: center;">Roof Tiles</h2> <h3 style="text-align: center;">Production of Roof Tiles from Locally available raw materials</h3>	
	
<ul style="list-style-type: none"> ➤ Roof tiles can made with any locally available clay and rice husk ash or fly ash. ➤ It would be low cost building materials and used in semi-pucca houses of rural areas and urban housing. ➤ Uses as a building material (protecting the roof of a house from weather damage). 	
<h3 style="text-align: center;">Process of the production of Artificial Marble</h3>	
	<p>Associate Scientist: Dr.Kazi Nasreen Farooque, Retired Director Md. Moniruzzaman, Retired PSO</p>
<ul style="list-style-type: none"> ➤ Artificial Marble is less expensive than Natural Marble. ➤ Artificial marble is hard and durable but Natural Marble is hard and brittle. ➤ It can be used as substitute of natural marble stone which is essential in construction for decoration like facing wall, floor in office and residential area. 	