

Programmes and Activities of Bangladesh Council of Scientific and Industrial Research (BCSIR)



Dr. Parvin Noor

Director

Institute of Glass and Ceramic Research and Testing (IGCRT)
BCSIR

18th Meeting of COMSATS Coordinating Council

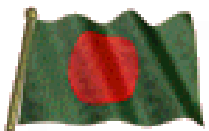
12-13 May 2015

Colombo, Sri Lanka

Introduction to BCSIR



BCSIR Main Campus



BCSIR wings – in Bangladesh



Institute of Mining,
Mineralogy and Metallurgy
(IMMM), Joypurhat



BCSIR Laboratories
Rajshahi



Leather Research
Institute (LRI), Savar

Dhaka Main Campus:

1. BCSIR Laboratories, Dhaka
2. Institute of Food Science and Technology (IFST)
3. Institute of Fuel Research and Development (IFRD)
4. Institute of Glass & Ceramic Research & Testing (IGCRT)
5. Pilot Plant and Process Development Centre (PP & PDC)
6. BCSIR Secretariat



BCSIR Laboratories
Chittagong

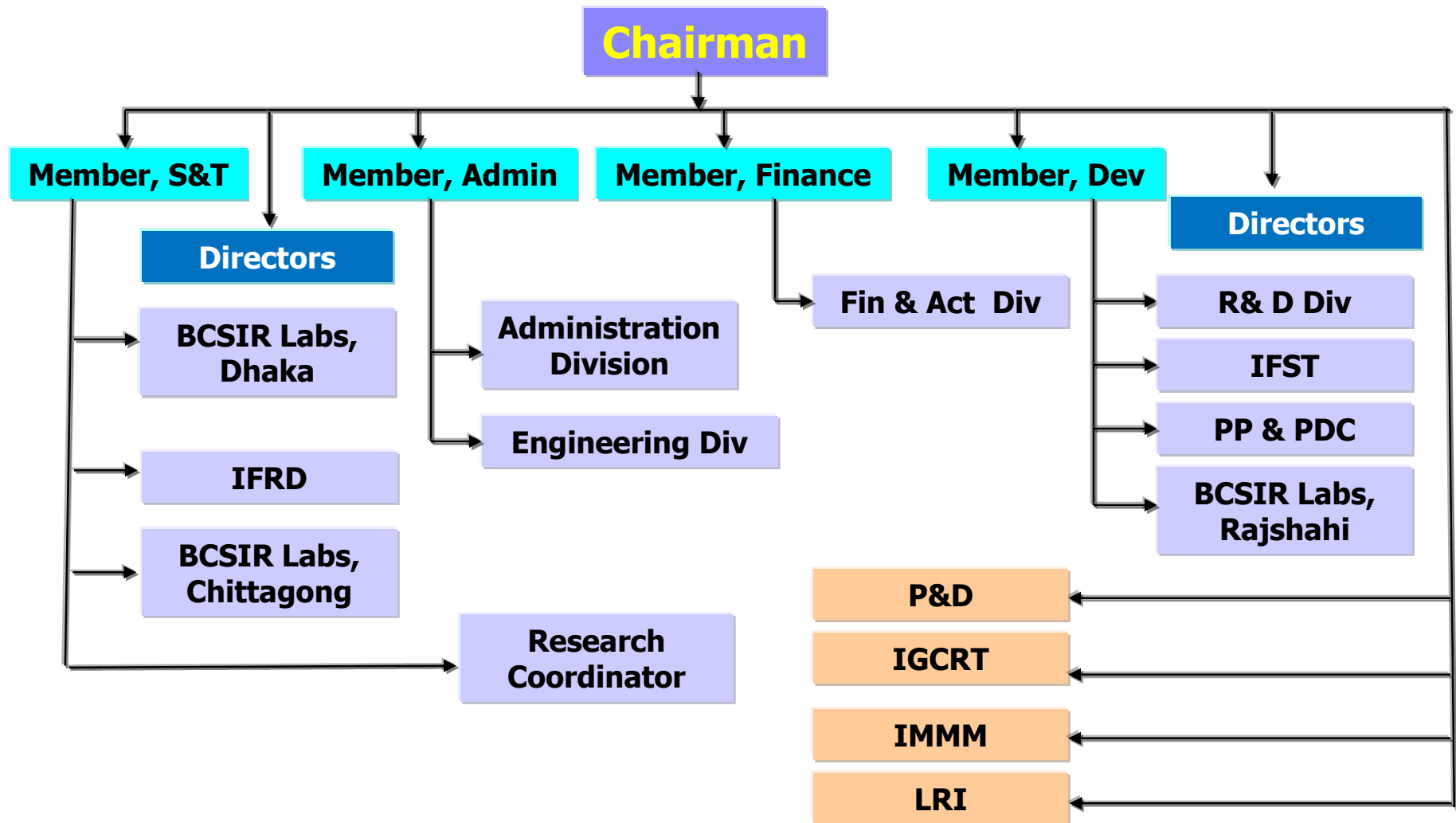


Introduction to BCSIR (Contd.)



Bangladesh Secretariat (MoST)

Introduction to BCSIR (Contd.) Organizational Structure



BCSIR Board : The Chairman, 4 fulltime & 4 part time members

Advisory Council: Formulates Policies on Science and Technology of the Organization

Introduction to BCSIR (Contd.)

R&D Areas

- ❑ Herbal medicine & natural products
- ❑ Bio- science & Bio-materials
- ❑ Biogas technology
- ❑ Leather technology
- ❑ Microbiology
- ❑ Mining, mineralogy & metallurgy
- ❑ Nanotechnology
- ❑ Chemical metrology
- ❑ Pharmaceutical chemistry
- ❑ Fibre and polymer
- ❑ Pulp and paper
- ❑ Food science & technology
- ❑ Renewable energy
- ❑ Glass, ceramics & Building materials
- ❑ Soil & environmental science

Activities of BCSIR: HRD

Since May 2014

- **HR**
 - Posts of scientists: 379
 - Ph.D- 45
- **On going Higher Education (Ph. D)**
 - At Home – 18
 - From Abroad - 30
- **Fellowship offered to students: 50**
- **Training:** Inter-laboratory training program on sophisticated laboratory instruments -15 training program per year (15 participants in each Training program)

Capacity Building

Capacity Building through

- Infrastructural Development
- Procurement of Equipment/Instrument
- ADP (Annual Development Programme)
- Development under Revenue Budgets: IFST, IGCRT, Dhaka Labs & LRI
- Skilled/Trained Human Resource Development

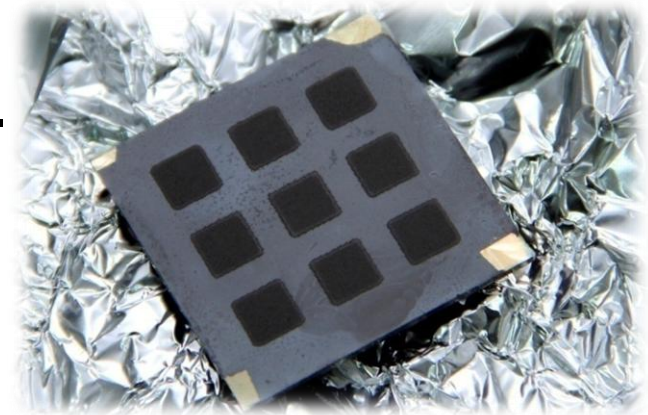
Capacity Building through Different Projects by ADP

Development of Technology for the production of Low Cost Solar Power (June 2012 - June 2015)

- To develop technology for low cost solar power.
- To strengthen the facilities to analyze the qualities of imported solar panels.

Achievement:

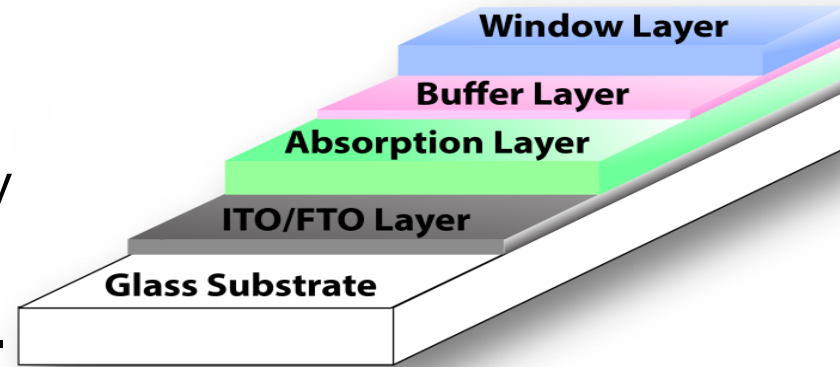
- Develop CdTe (Cadmium Telluride) solar cell.
- Develop of buffer layer made of CdZnS in nano scale.



**CdTe (Cadmium Telluride)
solar cell**

Development of Technology for the production of Low Cost Solar Power (Contd.)

- Development of window layer by Barium Selenide (BaSe): 74% Light permeability has achieved.
- Research on absorption layer is going on.



Solar Panel Testing Laboratory



Establishment of Designated Reference Institute for Chemical Measurements (July 2012 – June 2016).

- To develop infrastructure for production, collection, maintenance and dissemination of traceable certified reference materials (CRMs) as per ISO Guide 30 Series.
- To develop skilled human resources in the area of chemical metrology.
- To conduct R&D and develop training services in the field of chemical metrology.
- To development PT/ILC Program as per ISO/IEC 17043.

Achievement:

Achieved membership of:

- BIPM (Bureau International des Poids et Mesures)
- APMP (Asia Pacific Metrology Programme)



Conducting Proficiency Testing (PT)

Infrastructure Development of Fiber & Polymer Laboratory of BCSIR to Support Export Oriented RMG (July 2012 – June 2015)

- Establishment of ISO-17025 accredited Fiber & Polymer Laboratory of BCSIR .
- To support export-oriented Ready Made Garment (RMG), Jute & Plastic industries.
- To promote export and to enhance analytical support on Fiber & Polymeric Chemicals/Products to Bangladesh Custom House & different Govt. Organizations.
- Development of Food, Drug, Cosmetic & Textile-grade Dyes & Pigments from natural sources to save public health & environment.



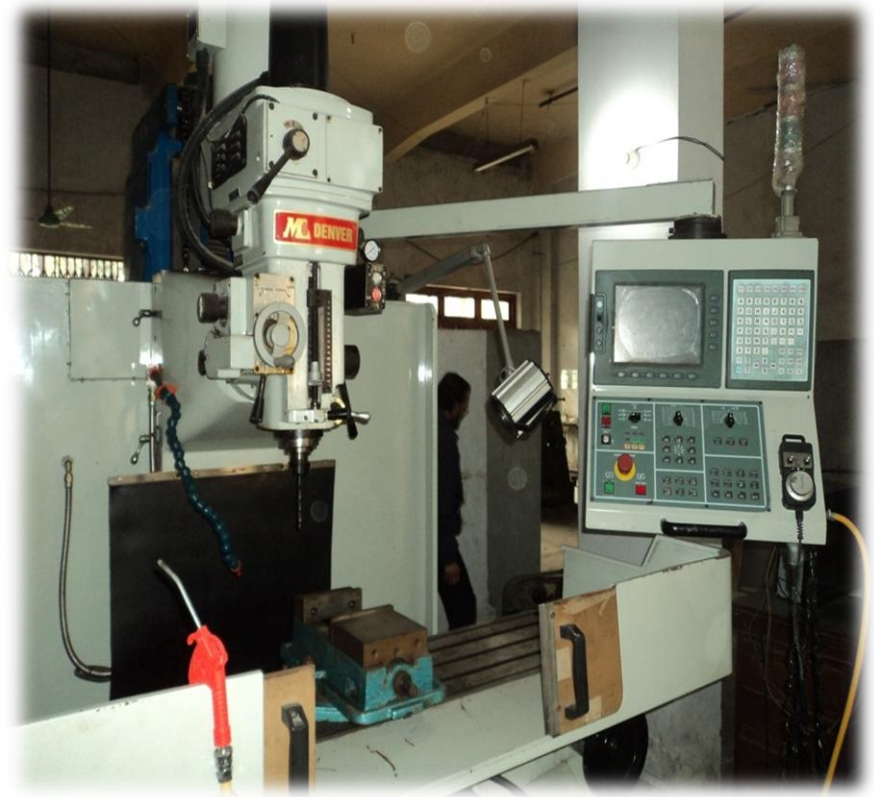
Modernization of Animal Laboratory for Biomedical and Toxicological Research (July 2012 – June 2015)

- To modernize animal laboratory for biomedical and toxicological research.
- To create facilities for the determination of effectiveness and undesired side effects of food supplements, feeds, medicine, new devices and procedures based on the results of animal experiments.
- To create facilities for the toxicity and safety test of foods, feeds, medicines and others.



Modernization of Pilot Plant Unit to Commercialize the Most Viable R&D Products of BCSIR (July 2013 – June 2016)

- To setup agro, herbal and food Technology based pilot plant.
- To setup a food technology incubation center in PP&PDC, BCSIR, Dhaka.
- To develop a modern workshops to fabricate the machineries related to pilot plant study.
- To renovate the pilot plant workshops and pilot plant unit.



CAPACITY BUILDING THROUGH RECURRING BUDGET

CAPACITY BUILDING SINCE 2014, CONDUCTING RESEARCH & PROVIDING SERVICES ON REAL TIME PCR BASED DETECTION GMO, HALAL (PORCINE) FOOD, AVIAN FLU (H5N1,H7,H9 SUB TYPES), GENE EXPRESSION STUDY FOR INDUSTRIES.



আপনি কি Bird Flu (H5N1)
ভাইরাস এর পরীক্ষা করতে চান?

বিদেশে নমুনা পাঠিয়ে আর অপেক্ষা নয়...
আর নয় কোন ব্যয়বহুল পরীক্ষা...

আমাদের অন্যান্য সেবাসমূহ

- বিদেশ থেকে আমদানিকৃত খাদ্যদ্রব্য এবং Animal feed এ শূকরের DNA পরীক্ষার মাধ্যমে হালাল নিশ্চিতকরণ।
- খাদ্যশস্য ও খাদ্যদ্রব্যে Genetically Modified (GMO) DNA সনাক্তকরণ।
- মাছ, চিংড়ি ও আলুর ক্ষতিকারক ভাইরাস সনাক্তকরণ।
- প্যাথজেনিক ব্যাকটেরিয়া সনাক্তকরণ।
- ফলমূল, খাদ্যদ্রব্য ও Biological Sample এর Pesticide, Antibiotics, Vitamin, Amino Acid, Mycotoxin সনাক্তকরণ।
- সাধারণ মাইক্রোবিয়াল টেস্ট।

বাংলাদেশ বিজ্ঞান ও শিল্প গবেষণা পরিষদ (BCSIR) এর অত্যাধুনিক গবেষণাগারে
real time PCR প্রযুক্তির মাধ্যমে দ্রুত ও নির্ভুলভাবে
Bird Flu (H5N1) ভাইরাস সনাক্ত করা হয়



Strengthening Analytical and Microbial Laboratories of Chittagong and Rajshahi-BCSIR.
BCSIR Laboratories, Rajshahi.
Binodpur, Rajshahi-6206. Tel: 880-721-750851, Fax: +880-721-750851, Cell: 01911200320
BCSIR Laboratories, Chittagong.
Chittagong Cantonment, Chittagong-4220. Tel: 880-31-681764, Fax: +880-31-682505, Cell: 01818969416

* অভিজ্ঞ ও রেজিস্টার্ড ভেটেরিনারী ডাক্তার কর্তৃক Sampling করে

Application Training on LCMS, Ion-trap Mass Spectrometer and Real Time PCR

1. Ion-trap Mass Spectrometry coupled with UHPLC

Target compounds: Common drugs/Amino Acids/Vitamins/Antibiotics/Unknown organic compounds.



2. Real time Polymerase Chain Reaction

Target: Porcine origin/Genetically modified organisms/Bird Flu virus (H5, H7, N1, N9)/Bacterial detection.



Food Safety and related services

1. Food Safety Lab

- Conducting Research on:
 - Food adulteration
 - Active ingredients
- Providing services for vitamin analysis



EU-FVO Team inspecting the Food Toxicology Laboratory

2. Food-toxicology Lab

- Conducting Research on Food-toxicology, Aflatoxin, Mycotoxin
- Providing services for detecting nitrofurans, mycotoxins, tetracycline, etc. in frozen food, shrimp (as per EU requirement)

Glass & Ceramic Research & Testing

Conducting Research on:

- Eco-Friendly Brick from Industrial waste
- Bone China from animal waste
- Nano Ceramic
- Inorganic pigment from beverage & other cans
- Providing services for ceramic and allied materials analysis



Achievement:

Economically viable Bone ash developed from animal waste for Ceramic Industry.



Pulp and paper research

- Conducting Research on:
 - Wood and non-wood pulping
 - Wood and Fibre Chemistry
 - Bio-refinery
 - Nano-crystalline cellulose (NCC) production



Scientists working at Pulp and Paper Research Lab

- Providing services for pulp and paper analysis

Achievement: NCC production in bio-refinery concept

Skilled/Trained Human Resource Development



Food Inspection & Quality Control Training for the
Officers of Bangladesh Army.

Skilled/Trained Human Resource Development (Contd.)

Refresher Training for CIDD Project Staff & BSCIC (Inspectors & Chemists) on Test Procedure of Iodized Salt



Achievement of BCSIR through R&D Projects since May 2014

- **R&D Projects:** 90
- **Process:** 16
 - (i) Leased out -18
 - (ii) Leasee - 18
- **Patent:** 06
- **Paper Published:** 150
- **Provided Analytical service:**
6000 samples analyzed



- **Achievement:**
 - Value added product (Chromium free protein solution) developed from tannery solid waste.
 - Unhairing of pre-tanning leather stages using organic thio compound.



AWARD AND ACHIEVEMENTS.

7th HOPE Meeting with Nobel Laureates 2015 held in Tokyo, Japan from 1-5 March 2015. BCSIR Scientist along with 4 other nationals awarded, "HOPE award" for best poster presentation

Award And Achievements (Contd.)



Research Interest-

- Pulping and Papermaking
- Bio-refinery
- Wood Chemistry
- Nano-crystalline cellulose

**Dr. M. Sarwar Jahan Elected Fellow , International Academy
of Wood Science, Feb., 2015**

BCSIR: Other Activities

Popularizing Science to the Young Group & Knowledge Dissemination

1. Appropriate Technology Dissemination to Grass root Level: 08 nos.

2. Organized Seminar, workshop:
- seminar organized: 04

3. science fair organized: 04 nos.



BCSIR: PARTICIPATED IN SEMINAR & WORKSHOP IN COMSATS COUNTRIES

2nd International Training Workshop, Conference & Exhibition on Desalination OIC members Perspectives, Iran, Oct. 20-22, 2014. Organizer: IROST



4th International Workshop & Conference on Nano-Materials & Nano-devices. Egypt, Dec 8-9, 2014. Organizer: COMSATS and ISESCO



Science & Technology (S&T) International Cooperation

S&T Cooperation For The Period 2014-2017 Signed Between The CSIR, India And The BCSIR



The Working programme was signed by Dr. Amitava Bandopadhyay, Head , International S & T Affairs Directorate, CSIR (on the right) & Dr. Md. Tofazzal Hossain, Member (S&T), BCSIR (on the left) on 15 Jan 2015.

The areas identified for cooperation include Materials Science, Chemical Metrology, Pharmaceutical Science & Technology with emphasis on Active Pharmaceutical Ingredients, Medicinal Plants and their derivatives & Polymer Science & Technology.



CSIR-BCSIR Joint Workshop on "Chemical Metrology" 15-16 January 2015 . CSIR, India-BCSIR, Bangladesh S&T cooperation, was organized at CSIR-National Physical Laboratory (NPL), New Delhi.

Bangladesh-Belarus Joint Committee Meeting On Science & Technology

Two agreements signed:

1. Regulation on the joint commission on Science, Technology Cooperation.
2. The Executive Programme of Belarus-Bangladesh Cooperation in Science & Technology for the 2015-2016.



Other Activities

since May 2014 (MOU)

BCSIR Signed MOU with educational Institute & QC services to the Industries.



Singing Ceremony
Between
DRiCM & Uniliver on
09 June 2014



Singing Ceremony
Between
DRiCM & Algasol BD Ltd.
on 31 December 2014



A delegation from High
Commission of India
visited laboratory
on 30 April 2015

Prospective collaborative Research

- Nanotechnology
- Renewable Energy
- Food Science and Technology
- Herbal Medicine and Medicinal Plant
- Pulp and Paper
- Biotechnology



Offering collaborative research with other centre of excellences of COMSATS

- Mineral and mineralogical services
- Halal food
- CRM production
- PT/ILC development
- Method development and validation
- Bioequivalence study
- Biomaterials, Biochemicals and Biofuel (Forest biorefinery)
- Materials and metallurgical science and engineering

Designated Reference Institute for Chemical Measurement (DRICM)

- ❖ **DRICM**, a newly established institute and now running under revenue budget. Works on proficiency testing, CRM development are going on.
- ❖ DRICM Conducting Research on chemical metrology, methodology validation
 - Providing services:
 - Calibration
 - Measurement
 - Bioequivalence
 - Providing training on:
 - Accreditation
 - Chemical measurements



Delegates of Belarus
visiting to Labs



OPCW visiting to Labs

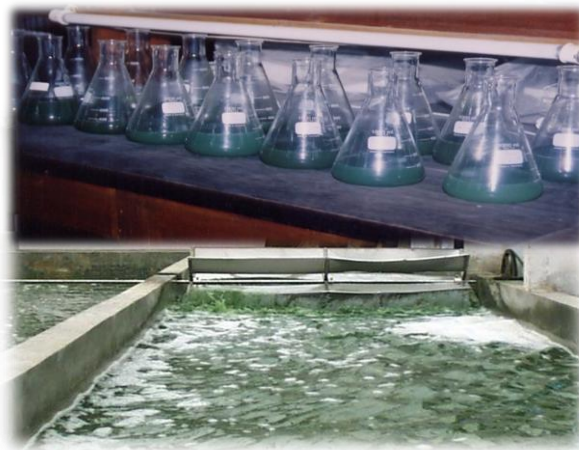
Future Aspiration

- Proficiency Testing for Chemical laboratory
- CRM development
- GMO detection in seed & animal feed
- **Proposing new ITRG on:**
 - Biorefinery
 - Green technology through Aquaculture (Blue-green algae)
 - Computational Chemistry and Chemometrics



Specific Proposal

- Organize international conference on chemical metrology
- Arrange Proficiency Testing program on regional interest
- Develop CRM considering the common interest of member countries
- Organized International conference on Bio- refinery/ Bio-materials under the umbrella of COMSATS.





Thank you