

Md. Noor-E-Alam Siddique

Lecturer
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Aspiration

Complete further graduate studies and build up a career as a prominent materials scientist and contribute in the research and development in the related fields

Self Assessment

- Capable of working efficiently both independently and as a team member
- Has sufficient passion and motivation for scientific research and development
- Energetic, target oriented, and capable of setting priorities and routine tasks
- Persuasive, persistent, and highly responsible
- Good in interpersonal relationship along with strong leading capabilities
- Excellent communication skills with speaking, writing, listening and reading in English

Education

- M.Sc., Materials & Metallurgical Engineering, BUET, Sep 09 (Expected)
- B.Sc., Materials & Metallurgical Engineering, BUET, GPA: **3.88** (out of 4.00), June 07

Test Scores:

- ✓ **TOEFL score: 104** (Reading: 25, Listening 28, Speaking 24, Writing 27)
- ✓ **GRE score: 1260** (Quantitative: 780, Verbal: 480, Analytical Writing: 4.00)

Research interest

- Processing, characterization and performance evaluation of electronic and structural ceramic materials, polymer nano-composites, optical materials.
- Materials for Fuel Cells and Sensors
- Modeling and Simulation

Publication

- *'Effect of Sintering Parameters on the Microstructure and Dielectric Properties of Nano-structured BaTiO₃'*, accepted for presentation at the International Conference on Sintering, American Ceramic Society, La Jolla, California, November 2008.

Undergraduate Thesis

Title: Effect of Zr doping and sintering temperature on the dielectric properties of BaTiO₃

Summary: Undoped BaTiO₃ of nano particle, 10%Zr doped BaTiO₃, 15%Zr doped BaTiO₃ and 20%Zr doped BaTiO₃ were sintered at 1350°C, 1375°C and 1400°C for 2 hours. The curie point was found to decrease with the increase in doping level. The curie temperature of undoped, 10% Zr doped and 15% Zr doped BaTiO₃ was found to be 131°C, 91°C and 67°C respectively. The curie temperature of 20% Zr doped BaTiO₃ is observed to be below room temperature. Sintering at 1350°C, 1375°C and 1400°C was studied. Optimum sintering temperature was found to be at 1400°C in terms of better dielectric properties and density. Approximately 95% of theoretical density was achieved when sintered at 1400°C. XRD analysis ensured the complete formation of BaTiO₃-BaZrO₃ solid solution after calcinations. Dielectric constants were found to be 4500 to 5000 when the samples were sintered at 1400°C and 2500 to 4000 when sintered at 1375°C at their curie points. At high frequency level of ac signal, the dielectric constants were found to be more than 15000.

Microstructures showed the uniform grain size of undoped BaTiO₃, and 20% Zr doped BaTiO₃ samples, but it shows the non-uniform grain size in 10% Zr doped BaTiO₃ samples.

Major Courses Taken:

- Optics, Waves and Oscillation
- Properties of Matter, Electricity and Magnetism, Modern Physics
- Crystallography and Structure of Materials
- Materials Thermodynamics
- Phase Diagrams and Transformation
- Physical Properties of Materials
- Ceramic and Glass Engineering
- Principles of Materials Characterization
- Polymers and Composites
- Ceramics for Advanced Applications

Major Course Projects:

- **Failure Analysis and Study of Boiler Superheater Tubes of Karnafuly Fertilizer Company (KAFCO), Chittagong, Bangladesh**, a course project (MME 442: Failure Analysis and Artifact Study), BUET, Nov 06 to Mar 07.
- **The Production and Processing Route of uPVC Pipe of National Polymer Industries Ltd, Gazipur, Bangladesh**, a course project (MME 476: Polymers and Composite), BUET, Nov 06 to Mar 07.
- **The Design of a Ferrous metal casting industry for the Production of various components of ferrous materials and the Study of Its Technical and Financial Feasibility in Bangladesh**, a course project (MME 440: Materials Processing Plant Design), BUET, Jan 06 to June 06.
- **Gating System and Feeder Requirement Calculations of Bronze Casting in the Sand Mold**, a course project (MME 346: Foundry Engineering), BUET, July 05 to Nov 05.
- **The Raw Materials and Processing Route of Sheet Glass Production of MEB Sheet Glass Industry, Narayanganj, Bangladesh**, a course project (MME 366: Ceramics and Glass Engineering), BUET, July 05 to Nov 05.
- **The Processing of Raw Materials and Production Route of Conventional Ceramics Products of Shinepukur Ceramics, Manikgonj, Bangladesh**, a course project (MME 366: Ceramics and Glass Engineering), BUET, July 05 to Nov 05.
- Simulate a computer program using MATLAB to **Draw A Binary Phase Diagram**, a course project (MME 338: Application of CAD to Materials Processing), BUET, Dec 04 to Apr 05.
- Developed a computer program using Turbo C to calculate the **Temperature Profile of a Body with Steady State Dual Mechanism Heat Transfer System**, a course project (MME 238: Computer Application to Metallurgy and Materials), BUET, Mar 04 to July 04.

Workshop, Training, and Seminar:

- ▲ A short course on **Science and Technology of Steelmaking**, Department of Materials and Metallurgical Engineering, BUET, Dhaka, July 7 & 8, 2005.
- ▲ A seminar on **Prospects of Coal/Gas Based Sponge Iron Production in Bangladesh**, Department of Materials and Metallurgical Engineering, BUET, Dhaka, October 12, 2004.
- ▲ A workshop on **Tribology – its Importance, Awareness and Practice in the Industries**, Directorate of Continuing Education (DCE) and Bangladesh Society of Mechanical Engineers (BSME), DCE, BUET, Dhaka, January 4, 2006.
- ▲ A lecture series on **Advanced Ceramic Based Sensors**, by Dr. Sheikh A. Akbar, Professor, Department of Materials Science and Engineering, Ohio State University, Columbus, Ohio, organized by Department of Materials and Metallurgical Engineering, BUET, Dhaka, June 2006.
- ▲ A training course on **Networking and Internet Applications**, Institute of Information and Communication Technology (IICT), BUET, Dhaka, February-April 2003.

International Conference:

- Attended in the international conference on **Structure, Processing and Properties of Materials (SPPM) 2004**, by Department of Materials and Metallurgical Engineering, BUET, in association with TMS, The Minerals, Metals and Materials Society, USA, at Pan Pacific Sonargoan Hotel, Dhaka, February 25-27, 2004.

Other Relevant Experiences:

- **Industrial Study Tour:** A month long Industrial Tour with experience with the production process of around 15 different industries in different fields of materials engineering, i.e. ceramics, steel, direct reduced iron, polymers, plastics, glass, machine tools, fertilizer, beach sand minerals, etc., organized by the Department of Materials and Metallurgical Engineering (MME), BUET, 2005.

Teaching Experience:

Currently teaching undergraduate students of Materials and Metallurgical Engineering, BUET

- **MME 323: Physical Properties of Materials** (Quantum mechanics, Insulators & Semiconductors, Electrical, Optical, Magnetic, and Dielectric Properties, Superconductivity, Devices based on the properties)
- **MME 338: Application of CAD to Materials Processing (MATLAB)**
- **MME 138: Introduction to Computing**
- **MME 235: Heat and Mass Transfer**
- **MME 241: Fuels and Combustion**
- **MME 242: Fuels and Combustion (Lab)**

Awards and Scholarships:

- **Amir Khushbahar Gold Medal, 61 Club Gold Medal** for holding the 1st position in the undergraduate study and 1st position in the Faculty of Engineering, BUET
- **University Grant Commission Scholarship**, for securing the first position in the faculty of Engineering undergraduate study
- **University Merit Award**, for eight consecutive semesters in the undergraduate study at BUET
- **Dean's List Scholarship**, for four consecutive levels in the undergraduate study at BUET
- **Academic Excellence Award**, Ahsanullah Hall, BUET, June 2007

Computer Skills

- Operating System: Windows XP/98/2000, Red Hat Linux
- Engineering Software: MATLAB 6.5.1, AutoCAD 2004
- Office Application: Microsoft Office applications (Word, Excel, Powerpoint)
- Programming Language: C/C++ (Turbo), Visual Basic

Extra Curricular Activities:

- Life Member, Students' Association of Materials and Metallurgical Engineering (**SAMME**).
- Was elected as **Publication Secretary** of Students' Association of Materials and Metallurgical Engineering (**SAMME**), Tenure: June 2004 – December 2005.
- Member, **Notre Dame Nature Study Club**, Notre Dame College, Dhaka.

References:

1. **Dr. Md. Fakhru Islam**, Professor and Head, Dept. of Materials & Metallurgical Engineering, BUET, Dhaka, Bangladesh, Email: fislam@mme.buet.ac.bd, Ph: (+8802) 8614640-44 (ext.7620)
2. **Dr. A. S. W. Kurny**, Professor, Dept. of Materials & Metallurgical Engineering, BUET, Dhaka, Bangladesh, Email: aswkurny@mme.buet.ac.bd, Ph: (+8802) 8614640-44 (ext.7337)