

KUMKUM AHMED

Personal Detail

Address Department of Mechanical System Engineering, Yamagata University, Graduate School of Science and Engineering
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Email km_du08@yahoo.com
Sex Female
Date of Birth Oct 11, 1989
Nationality Bangladeshi

Educational Qualification

Apr 2014- Present
(Expected Doctor of Engineering
Mar 2019)
3rd year of 5 year leading doctoral program
Innovative Flex Course for Frontier Organic
Material Systems (iFront)
Department of Mechanical System Engineering
Yamagata University Graduate School of Science and Engineering
Theme: Development of high strength ionic gels and their application in electroactive polymer (EAP) actuators.

Main focus of my research is

- Development of unique type of ionic gels in IL media containing multifunctional organic monomers
- Characterization of gels and tuning of different properties (*e.g.* mechanical, conductive) for actual application
- Development of actuators using novel ionic gels

Oct 2012- Feb 2014
Master of Science in Physical Chemistry
Department of Chemistry, University of Dhaka, Bangladesh
Theme: Physicochemical properties of ionic liquid and organic solvents binary mixtures

Mar 2008- Sep 2012
Bachelor of Science in Chemistry
Department of Chemistry, University of Dhaka, Bangladesh

Skill

Experimental Skill

- Synthesis of polymeric gels by sol-gel, casting and bulk polymerization method
- Material characterization by NMR, IR, UV-vis, fluorescence spectrophotometer, polarizing microscope, SEM, LCR meter, tensile and compression analysis, frictional analysis, TGA and DSC analysis
- Operation of 3D printer includes UP mini, Makerbot replicator and Objet 30 pro. and related CAD design by Solid works

Communication

- Fluent in Bangla and English
- Basic in Spanish, Japanese and Hindi

Award and Grant

Award

Mar 2016 Best presentation award in iFront in the Qualifying Examination (QE) for promotion to third year
Oct 2014 Best group presentation award at Yamagata University-Kyushu

Oct 2014 university joint symposium
Best oral presentation award at 2nd International Conference of Smart Systems Engineering 2014 (October 17, 2014)

Grant

Apr 2016- Present Research Fellowship for Young Scientist (DC1) with monthly stipend and yearly research grant (~ JPY 1,000,000) for three years from Japan Society for the Promotion of Science (JSPS)

Apr 2014- Mar 2016 Monthly stipend and additional support from iFront leading program funded by Ministry of Education, Culture, Sports and Technology in Japan (MEXT)

Working Experience

Sep 2015- Oct 2015
(3 weeks) Arkema, Kyoto Technical Center, Japan (Domestic Internship)
Theme: Investigation of mechanical and aging properties of different grade of KYNAR polymer

Nov 2016 Nidek Co. Ltd., Gamagori, Aichi (Domestic Internship)
Theme: Development of hybrid intraocular lens by mold technics and their characterization

Publication (Peer-reviewed)

1. M. Hasnat Kabir, **Kumkum Ahmed**, Hidemitsu Furukawa. "The effect of cross-linker concentration on the physical properties of poly(dimethylacrylamide-co-stearyl acrylate)-based shape memory hydrogels", *Microelectron. Eng.*, *150*, 43-46 (2016).
2. **Kumkum Ahmed**, Yosuke Watanabe, Tomoya Higashihara, Hiroyuki Arafune, Toshio Kamijo, Takashi Morinaga, Takaya Sato, Masato Makino, Masaru Kawakami, Hidemitsu Furukawa. "Investigation of mechanical properties and internal structure of novel ionic double-network gels and comparison with conventional hydrogels", *Microsyst. Technol.*, *22* (1), 17-24 (2015).
3. **Kumkum Ahmed**, Anika Auni, Gulshan Ara, Md. Muhibur Rahman, Md Yousuf Ali Mollah, Md Abu Bin Hasan Susan. "Solvatochromic and fluorescence spectroscopic studies on polarity of ionic liquid and ionic liquid-based binary systems", *J. Ban. Chem. Soc.*, *25*(2), 146-158, (2012).

International Conference (2 of 5)

1. **Kumkum Ahmed**, Naufumi Naga, Masaru Kawakami, Hidemitsu Furukawa. Development of Ionic Gels Using Thiol-based monomers in ionic liquid, SPIE Smart Structures/NDE, Las Vegas, USA, March 8-12, 2016. (Oral)
2. **Kumkum Ahmed**, Naufumi Naga, and Hidemitsu Furukawa. Ionic gel based on multifunctional thiol monomers, International Symposium on Rheology, September 23 -25, 2015, Kobe, Japan. (Oral)

Reference

Dr. Hidemitsu Furukawa

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Chair, Research Group on Polymer Gels, Society of Polymer Science, Japan.
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