

Desalegn Alemu Mengistie

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Education

Sept. 2009 - Feb. 2014 **PhD in Nanoscience and Technology**, Academia Sinica and National Tsing Hua University, Taiwan (Double Certificate)

PhD thesis: Conductivity enhancement of PEDOT:PSS and applications for polymer solar cells and thermoelectrics

Advisor: Prof. Chih-Wei Chu (Academia Sinica)

Co-advisor: Prof. Pen-Cheng Wang (National Tsing Hua University)

July 2004 - June 2006 **M.Tech in Fiber Science and Technology**, Indian Institute of Technology Delhi, India

Master thesis: Preparation and application of nanocapsules for textile finishing

Sept. 1997 - June 2002 **B.Sc. in Textile Engineering (Chemical Processing specialization)**, Bahir Dar University, Bahir Dar, Ethiopia

Awards

Sept. 2013 - National Science Council of Taiwan student conference travel grant award

July 2013 - Taiwan International Graduate Program (TIGP) Student Conference Travel Grant award

April 2012 - Nano-Poster competition 2nd rank and money 50,000 NTD (~1,800 USD)

Sept. 2009 - Taiwan International Graduate Program (TIGP) scholarship, Taiwan

July 2004 - Ethiopian government international scholarship, Addis Ababa, Ethiopia

July 2002 - Graduate assistantship, Bahir Dar University, Bahir Dar, Ethiopia

Research and Teaching Experiences

Nov. 2015 – to date **Visiting researcher**, department of Chemistry and Chemical Engineering, Chalmers University of Technology, Gothenburg, Sweden

Main activities and responsibilities: Conducting research in organic solar cell and thermoelectric area

April 2014 – to date **Assistant professor**, EiTEX, Bahir Dar University, Bahir Dar, Ethiopia

Main activities and responsibilities: Delivering courses to postgraduate and undergraduate students. Advising postgraduate and undergraduate student projects (advised 2 postgraduate and 2 undergraduate projects). Conducting research and consultancy.

Sept. 2009 - March 2014 **Research Assistant**, Research Centre for Applied Sciences, Academia Sinica, Taipei, Taiwan

Main activities and responsibilities: Conducted research in polymer and small molecule organic solar cells fabrication and characterization. Assisted the professor in project proposal preparation. Took care of lab meeting arrangement and scheduling. Mentored three junior PhD students.

July 2006 - Aug. 2009 **Lecturer**, Faculty of Engineering, Bahir Dar University, Bahir Dar, Ethiopia

Courses taught: Textile fibers and chemical processing of textiles

Research: Dyeing textiles with natural dyes

Projects advised: advised/supervised 6 undergraduate projects

July 2003 - July 2004 **Assistant lecturer and department head**, Faculty of Engineering Bahir Dar University, Bahir Dar, Ethiopia

July 2002 - July 2003 Graduate assistant II, Faculty of Engineering, Bahir Dar University, Bahir Dar, Ethiopia

Publications and Presentations

Journal articles

1. **Desalegn Alemu**, Hung-Yu Wei, Kuo-Chuan Ho and Chih-Wei Chu, Highly conductive PEDOT:PSS electrode by simple film treatment with methanol for ITO-free polymer solar cells, *Energy Environ. Sci.*, 2012, 5, 9662-9671. (**Most read paper** for Oct. and Nov. 2012, **IF = 20.52**, # cited = 161)
2. **Desalegn Alemu Mengistie**, Pen-Cheng Wang and Chih-Wei Chu, Effect of molecular weight of additives on the conductivity of PEDOT:PSS and efficiency for ITO-free organic solar cells, *J. Mater. Chem.A*, 2013, 1, 9907. (**Most read paper** for June 2013, **IF = 7.44**, # cited = 48)
3. Pen-Cheng Wang, Li-Hung Liu, **Desalegn Alemu Mengistie**, Kuan-Hsun Li, Bor-Jiunn Wen, Tzong-Shi Liu, Chih-Wei Chu, Transparent electrodes based on conducting polymers for display applications, *Displays*, 2013, 34, 301. (**Most read paper** for Oct to Dec. 2013, **IF = 1.03**, # cited = 26)
4. **Desalegn A. Mengistie**, Mohammed A. Ibrahim, Pen-Cheng Wang and Chih-Wei Chu, Highly conductive PEDOT:PSS treated with formic acid for ITO-free polymer solar cells, *ACS Appl. Mater. Interfaces*, 2014, 6, 2292. (**IF = 6.72**, # cited = 57)
5. Mohammed Aziz Ibrahim, Feng-Yu Wu, **Desalegn Alemu Mengistie**, Chia-Seng Chang, Lain-Jong Li, and Chih Wei Chu, Direct conversion of multilayer MoO₃ to nanorods for multifunctional electrodes in lithium-ion battery, *Nanoscale*, 2014, 6, 5484. (**IF = 7.39**, # cited = 11)
6. **Desalegn Alemu Mengistie**, Chang-Hsiao Chen, Karunakara M. Boopathi, Ferry W. Pranoto, Lain-Jong Li, and Chih-Wei Chu, Enhanced thermoelectric properties of PEDOT:PSS bulky papers by enhancing electrical conductivity, *ACS Appl. Mater. Interfaces*, 2015, 7, 94. (**IF = 6.72**, # cited 12)

Conference Proceedings

7. Desalegn Alemu Mengistie, Pen-Cheng Wang and Chih-Wei Chu, Highly conductive PEDOT:PSS electrode treated with polyethylene glycol for ITO-free polymer solar cells, 224th ECS Meeting, San Francisco, *ECS Transactions*, 2013, 58 (11), 49-56.
8. Desalegn A. Mengistie, Pen-Cheng Wang and Chih-Wei Chu, Highly efficient ITO-free polymer solar cells using PEDOT:PSS treated with organic acid anodes, *Optics & Photonics Taiwan, International Conference (OPTIC)*, Taiwan, Dec. 5 – 7, 2013.

Conference Oral Presentations

1. Desalegn Alemu Mengistie and Chih-Wei Chu, Enhanced Thermoelectric Performance of PEDOT:PSS Flexible Bulky Papers, 2nd Annual Conference on Energy for Sustainable Development, Bahir Dar University, Bahir Dar, Ethiopia, June 12th, 2015.
2. Desalegn Alemu Mengistie and Chih-Wei Chu, ITO-free Polymer Solar Cells using Highly Conductive PEDOT:PSS Anode, 1st Ethio-Swedish Workshop on OPV and Biopolymer-based Batteries and Supercapacitors for Solar Electricity Storage, AAU, Addis Ababa, Ethiopia Nov. 27 - 28, 2014.
3. Desalegn Alemu Mengistie and Chih-Wei Chu, Printable Polymer Solar Cells using PEDOT:PSS anodes, 4th National Conference: Environment and Development, Dilla University, Dilla, Ethiopia, May 14-15, 2014.
4. Desalegn Alemu Mengistie and Chih-Wei Chu, PEDOT:PSS for flexible polymer solar cells, Second annual conference on science: Science, Sustainable Development and Global Challenges, Bahir Dar University, Bahir Dar, Ethiopia, May 2 - 3, 2014.
5. Desalegn A. Mengistie, Pen-Cheng Wang and Chih-Wei Chu, Highly efficient ITO-free polymer solar cells using PEDOT:PSS treated with organic acid anodes, Optics & Photonics Taiwan, International Conference (OPTIC), Taiwan, Dec. 5 - 7, 2013.
6. Desalegn Alemu Mengistie, Pen-Cheng Wang and Chih-Wei Chu, Highly conductive PEDOT:PSS electrode treated with polyethylene glycol for ITO-free polymer solar cells, 224th ECS Meeting, San Francisco, Oct 27 - Nov 1, 2013.
7. Desalegn Alemu and Tamirat Tesfaye, Dyeing of cotton with eucalyptus and mango, 2nd Textile and Garment national workshop, Bahir Dar University, May 2009.
8. Desalegn Alemu and Kushal Sen, Preparation and application of nanocapsules for textile finishing, Emerging trends in science and technology, Bahir Dar University, May 2007.

Poster Presentations

9. Desalegn Alemu Mengistie, Mohammed Aziz Ibrahim, Pen-Cheng Wang and Chih-Wei Chu, Applications of PEDOT:PSS for polymer solar cells and thermoelectrics, 2014 International Symposium on Frontiers of Technology for the Future: Low Carbon Energy and Life (FoTEL 2014), June 24-27, 2014 at NTHU, Hsinchu, Taiwan
10. Desalegn Alemu and Chih-Wei Chu, Highly Conductive PEDOT:PSS Electrode by Simple Film Treatment with Methanol for ITO-free Polymer Solar Cells, MRS Fall Meeting and Exhibit, Boston, Nov. 25-30, 2012.
11. Desalegn Alemu and Chih-Wei Chu, Methanol treatment of PEDOT:PSS to tremendously enhance its conductivity, Nano Program students poster competition, Academia Sinica, Taipei, April 27, 2012.

Laboratory Skills and Experiences

- Dyeing and Finishing of Textiles, Textile Fibers, Textile chemicals
- Fabrication of organic solar cells and spectroscopic/electrochemical characterization of solar cells
- Hall Effect measurement
- Characterization of thermoelectric materials
- Fabrication and characterization of nanoparticles (both polymeric and metallic)
- Well equipped with working principle and practical use of many physical and chemical characterization equipment including SEM, AFM, XPS, UV-Visible spectrometer, FTIR TGA, TMA, DSC.

Administrative Experiences

- Chairman of research and development committee of the institute (EiTEX) (Oct. 2014 to Oct. 2015)
- Organizing committee for the 4th international conference CTA-15 (Cotton, Textiles and Apparel value chain in Africa), EiTEX, Bahir Dar University, May 1-2, 2015
- Board member of Ethiopian Textile Engineers Association (2006 – August 2009)
- Chairman of 2nd national workshop organizing committee of the department (Sept. 2008 – May 2009)
- Member of departmental curriculum revision committee and academic committee (July 2006 – Aug. 2009)
- Task Force Committee member for textile and garment industries support institute (TGISI) appointed by the president of the university, Bahir Dar University (2003 – 2004)
- Bid evaluation committee for international consultant for TGISI (2004)
- Head of textile engineering department, Bahir Dar University (July 2003 – July 2004)

Professional Membership

- Materials Research Society (MRS)
- Electrochemical Society (ECS)

Social Skills and Competences

- Team spirit gained through working in different committee and research groups
- Competent in living and working with multicultural and multilingual people society
- Good communication and managerial skill gained through experience in different positions and committee works
- Took one month training on ISO 9001:2000 as a Quality Auditor
- Took training on business process re-engineering (BPR)

Hobbies

Reading, hiking, gardening, badminton and biking

References

1. Prof. Christian Müller
Chemistry and Chemical Engineering, Chalmers University of Technology, Gothenburg, Sweden
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2. Prof. Addisu Ferede
Scientific Director, Ethiopian Institute of Textile and Fashion Technology, Bahir Dar University, Bahir Dar, Ethiopia
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3. Prof. Chih-Wei Chu
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