



**Department of  
Polymer Science  
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### **Biography:**

Mesfin Tsigé is an Associate Professor at the Department of Polymer Science at the University of Akron. He obtained B.S. and M.S. degrees in Physics from Addis Ababa University, Ethiopia. He received the Ph.D. degree in condensed matter physics from Case Western Reserve University in 2001. He then went to Sandia National Laboratories and after four years as post-doctoral researcher he joined the faculty in the department of Physics at Southern Illinois University at Carbondale, achieving the rank of Associate Professor before moving to the University of Akron in 2010.

### **Awards/Accomplishments:**

- NSF CAREER Award (2009)
- ORAU POWE Junior Faculty Enhancement Award (2007)
- Graduate Fellow of the German Academic Exchange Service (DAAD) (1991-1994)

### **Research Interests:**

Tsigé's research interests include computational polymer science and soft condensed matter physics, structure and dynamics of molecules at surfaces and interfaces, elastic and failure behavior of thermosetting polymers, molecular transport through nanostructured materials and interaction of water with surfaces.

### **Industrial Sector Focus:**

Advancing discovery through scientific computing

### **Unique Laboratory Facilities:**

Tsigé's group has a 32-node 2.8 GHz AMD Opteron cluster and two NVIDIA GeForce GTX480 graphics processing units (GPUs).

### **Recent Representative Publications:**

1. J. Miao, Mesfin Tsigé and P. Taylor, "Generalized model for the diffusion of solvents in glassy polymers: From Fickian to super Case II," *J. Chem. Phys.*, 147, 044904 (2017).
2. J. Miao, D. Reneker, Mesfin Tsigé and P. Taylor, "Molecular dynamics simulations and morphology analysis of TEM imaged PVDF nanofibers," *Polymer*, 125, 190-199 (2017).
3. Zhuonan Liu, Tianbo Liu and Mesfin Tsigé, "Elucidating the Origin of the Attractive Force Among Hydrophilic Macroions," *Scientific Reports*, 6, 26595 (2016).
4. Kshitij C. Jha, Emmanuel Anim-Danso, Selemon Bekele, George Eason, and Mesfin Tsigé, "On modulating interfacial structure towards improved anti-icing performance," *Coatings*, 6, 3 (2016) (Invited Commentary article).
5. Kshitij C. Jha, Ali Dhinojwala and Mesfin Tsigé, "Local Structure Contributions to Surface Tension of a Stereoregular Polymer," *ACS Macro Letters*, 4, 1234-1238 (2015).
6. J. Miao, Ram S. Bhatta, D. H. Reneker, Mesfin Tsigé and Philip Taylor, "Molecular Dynamics Simulations of Relaxation in Stretched PVDF Nanofibers," *Polymer*, 56, 482-489 (2015).
7. Ram S. Bhatta and Mesfin Tsigé, "Effect of Fluorination on Electronic Properties of Polythienothiophene-co-benzodithiophenes and Their Fullerene Complexes", *ACS Applied Materials & Interfaces*, 6, 15889-15896 (2014).
8. Ram S. Bhatta and Mesfin Tsigé, "Chain length and torsional dependence of exciton binding energies in P3HT and PTB7 conjugated polymers: A first-principles study," *Polymer*, 55, 2667 (2014).