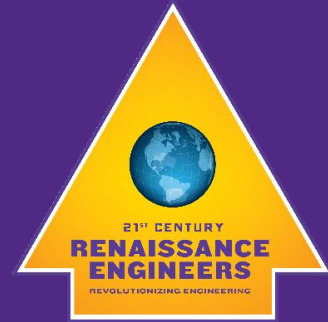


# College of Engineering Seminar Announcement



*Renaissance Engineers are  
adaptive professionals who are inquisitive,  
creative and make significant contributions for  
the betterment of humanity.*

## ***“Understanding soft matter: from polymer nanocomposites to C. elegans”***

**Presented by Name: Venkat Padmanabhan**

**Abstract** In a world where the demand for energy is growing exponentially everyday, it is imperative that non conventional and renewable sources are tapped to meet this need. polymer-based solar cells have gained significant interest in the past few years as a potential alternate resource due to a number of advantages like low cost materials, inexpensive fabrication techniques and prospects of flexible solar panels. The major problem, however, preventing large scale applications of such cells is their low efficiency. The performance of a polymer cell depends strongly on the morphology of constituents in the photo-active layer. In the first part of my talk, I will be discussing my work focused on scanning the parameter space for controlling the assembly of nanoparticles in polymer matrices that could potentially be used for improving the efficiency of these devices.

In the second part, I will be discussing some of our recent understanding pertaining to the behavior of a 1 mm long nematode, *Caenorhabditis elegans*. The highly developed chemosensory system in these nematodes is used not only to detect food but also to avoid danger. Such an implementation of advanced locomotory behavior with only 302 neurons is extremely exceptional. Recently, we have discovered and reported for the first time that *C. elegans*, like cells, undergo durotaxis and show a strong preference to stiffer surfaces. Interestingly, this preference is not related to their locomotion speed, rather a strategy that they might have developed to improve their chances of finding food.

**About the Speaker** Dr. Padmanabhan received his doctoral degree in Chemical Engineering from Columbia University in 2009, where he worked on developing polymer membranes for Proton Exchange Membrane fuel cells for high temperature applications. He then worked as a Postdoctoral Researcher at the University of Delaware and subsequently as a Research Associate/Lecturer at Texas Tech University. Before joining the Chemical Engineering Department at Tennessee Tech, he was an Assistant Professor at the Indian Institute of Technology (IIT) Kharagpur. His research interests are advanced functional materials for energy applications and bio-mechanics of the nematode, *Caenorhabditis elegans*.

**Date: November 8, 2016**

**Time: 4:30-5:30**

**Location: Prescott 225**