Other - Enabling Process Innovation Through Computation Seminar Series (EPIC)

Interface Instability in Evaporation and Convection

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Patrick F. Taylor Hall 1106
October 11, 2013 - 02:00 pm

Abstract:

There are several applications in chemical engineering in which convection phenomena play a very important role in many applications ranging from heat pipes to crystal growth and the coating of films. Common to, many of these problems is the occurrence of an interface such as a fluid-fluid or fluid-solid interface and when there is an interface there often occurs a form of interfacial instability wherein a sudden change in interfacial pattern occurs as system control variable crosses a critical value.

In this talk, evaporative convection accompanies the classical Rayleigh and Marangoni convection phenomena. Having two or more fluids introduce solutal effects into the system such as concentration dependence of density and concentration dependence of surface tension. Due to these new effects binary mixtures behave different than pure ones. The results reveal competition between liquid and vapor dynamics and profound differences between pure and binary systems. I shall show results of computations as well as some movies of experiments with and without evaporation phenomena.

ATTEND ONLINE AT: HTTP://CONNECT.LSU.EDU/EPIC-SEMINARS

Speaker's Bio:

Ranga Narayanan is the Bonnie and Fred Edie Chair and Distinguished Professor of Chemical Engineering at the University of Florida. His research is in the area of pattern formation. He has over 200 published papers and conference presentations along with five authored and edited books. Among his awards are the *Fulbright Distinguished Chair Fellowship (Israel 2012), Senior Scientist, European Commission (2011-12)*, *Distinguished Foreign Scientist Award* from the Government of India (2011), *Japan Society Foundation Fellowship* (2009 and in 2013), *Fulbright Scholar* (Belgium, 2001), *Alexander von Humboldt Fellowship* (1989) and election to the *International Aeronautics Academy* (2012) in addition to *Fellowships in the AIChE and the AAAS.*

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