

GEC07-2007-000069

Abstract for an Invited Paper
for the GEC07 Meeting of
the American Physical Society

Modeling atmospheric pressure plasmas for biomedical applications

DAVID GRAVES, University of California

The use of cold, atmospheric pressure plasmas for biomedical treatments is an exciting new application in gaseous electronics. Investigations to date include various tissue treatments and surgery, bacterial destruction, and the promotion of wound healing, among others. In this talk, I will present results from modeling the 'plasma needle,' an atmospheric pressure plasma configuration that has been explored by several groups around the world. The biomedical efficacy of the plasma needle has been demonstrated but the mechanisms of cell and tissue modification or bacterial destruction are only just being established. One motivation for developing models is to help interpret experiments and evaluate postulated mechanisms. The model reveals important elements of the plasma needle sustaining mechanisms and operating modes. However, the extraordinary complexity of plasma-tissue interactions represents a long-term challenge for this burgeoning field.