

GEC14-2014-020021

Abstract for an Invited Paper  
for the GEC14 Meeting of  
the American Physical Society

**The Grand Challenges for Engineering in the 21st**

THOMAS KATSOULEAS, Dean, Duke Pratt School of Engineering

The Grand Challenges for Engineering in the 21st century identified by the NAE re-frame the engineering profession in human facing terms rather than in terms of disciplines or devices. Nevertheless, plasmas will play a major role in solving many of these challenges. The challenges involve making the world more sustainable, more healthful, more secure and more joyful. From the challenge of Provide Clean Water (to nearly a billion people who lack regular access to it), to Provide Energy from Fusion and Engineer the Tools of Scientific Discovery, plasmas will play an essential role. This talk highlights progress on the NAE Grand Challenges and the role that plasmas are playing in addressing them. Particular attention will be given to plasma-based particle accelerators and the question of whether they really offer a path to smaller, cheaper accelerators that could impact human health through cancer therapies or enable new discoveries at the high energy frontier.