Wei Peng-Sheng, J Laser Opt Photonics 2016, 3:2 (Suppl)
http://dx.doi.org/10.4172/2469-410X.C1.005

The effects of laser characteristics on melting of workpiece subject to surface plasmon excited by a pulsed laser

Wei Peng-Sheng[1,2]
[1]National Sun Yat-Sen University, Taiwan
[2]Beijing University of Technology, China

This study is to predict heating and melting of a workpiece with a self-consistent, deformable free surface subject to a surface plasmon induced by a pulsed laser in TM mode. A surface plasmon on a metal surface can be excited by an incident laser beam in a TM mode, representing that magnetic field is perpendicular to the incident plane of electrical field. In this study, the Maxwell electromagnetic equations, energy equation and fluid flow equations are solved. A systematical investigation of heating and melting and surface deformationof micro-scaled components in various plasma processing and nanotechnologyis therefore provided.

Biography

Peng-Sheng Wei received PhD in Mechanical Engineering Department at University of California, Davis, in 1984. He has been a Professor in the Department of Mechanical and Electro-Mechanical Engineering of National Sun Yat-Sen University, Kaohsiung, Taiwan, since 1989. He has contributed to advancing the understanding of and to the applications of electron and laser beam, plasma, and resistance welding through theoretical analyses coupled with verification experiments. Investigations also include studies of their thermal and fluid flow processes, and formations of the defects such as humping, rippling, spiking and porosity. He has published more than 80 journal papers. He is a Fellow of AWS (2007), and a Fellow of ASME (2000). He also received the Outstanding Research Achievement Awards from both the National Science Council (2004), and NSYSU (1991, 2001, 2004), the Outstanding Scholar Research Project Winner Award from National Science Council (2008), the Adams Memorial Membership Award from AWS (2008), the Warren F Savage Memorial Award from AWS (2012), and the William Irrgang Memorial Award from AWS (2014). He has been the Xi-Wan Chair Professor of NSYSU since 2009, and Invited Distinguished Professor in the Beijing University of Technology, China, during 2015-2017.

pswei@mail.nsysu.edu.tw

Notes: