Laser-plasma induced copper surface phenomena

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In this paper, the characteristics of bulk copper surface ablated by 1064 nm Q-switched Nd:YAG laser have been studied in atmospheric air. The parameter of generated plasma is studied using the plasma emitted lines in the range of 200 to 600 nm wavelength. Width and dept of holes on the surface target are considered in different laser pulse energy. Formation of large scale structure on the surface of copper target due to Kelvin-Helmholtz instability was discussed in detail. Furthermore, the formation of copper oxide and changes in surface topology of the target were investigated by means of metallographic and SEM images. The spectroscopic and microscopic observation, illustrate the direct dependence of CuI density and ablation depth on the applied pulse energy.