

Method for selective plating of a metal substrate using laser developed masking layer and apparatus for carrying out the method

Abstract

Method for selective plating of a metal substrate using laser developed masking layer and apparatus for carrying out the method, wherein the method comprises the steps of applying a thin layer of an epoxyurethane, acrylic or epoxy based plating resist on the metal substrate by electrophoretic coating; curing said plating resist on said substrate; selectively removing said plating resist from said substrate by subjecting said plating resist to a laser beam emitted by a frequency doubled Nd:YAG laser having a wavelength of 532 nm and operated at a repetition rate of about 300 Hz; and scanning said laser beam on said plating resist by means of an optical galvo system according to a pattern along which the metal substrate is to be metal plated, wherein the plating resist is selected so as to be at least substantially transparent to the said laser beam and the metal is selected to absorb at least a substantial part of the energy of said laser beam, whereby a substantial portion of the laser energy is transmitted through said plating resist and absorbed by said metal substrate resulting in said metal substrate being heated at the surface thereof to form a plasma at the interface between the coating resist and the metal substrate, the plasma causing the plating resist thereover to blow off thereby exposing the surface of the metal substrate along said pattern suitable for metal plating; and subjecting said substrate to metal plating at the exposed surface thereof.

Fig. 1