

A B S T R A C T

The present invention essentially relates to a method of preparing an electrically insulating film at the surface of an electrical conductor or semiconductor substrate, such as a silicon substrate.

According to the invention, this method comprises:

a) bringing said surface into contact with a liquid solution comprising:

- a protic solvent;
- at least one diazonium salt;
- at least one monomer that is chain-polymerizable and soluble in said protic solvent;
- at least one acid in a sufficient quantity to stabilize said diazonium salt by adjusting the pH of said solution to a value less than 7, preferably less than 2.5;

b) the polarization of said surface according to a potentio- or galvanopulsed mode for a duration sufficient to form a film having a thickness of at least 60 nanometres, and preferably between 80 and 500 nanometres.

Application: Metallization of through-vias, especially of 3D integrated circuits.