

New encrypted tag system for tagging and tracking objects

CSIC in collaboration with Polytechnic University of Madrid has developed a new method to tag objects that consists in fabricate on them one or more nanometer-thick and invisible layers by plasma polymerization. Any kind of pattern can be recorded in these layers, by laser or other techniques, allowing its recognition, control and tracking. Highly complex patterns containing much information can be recorded.

An offer for Patent Licensing

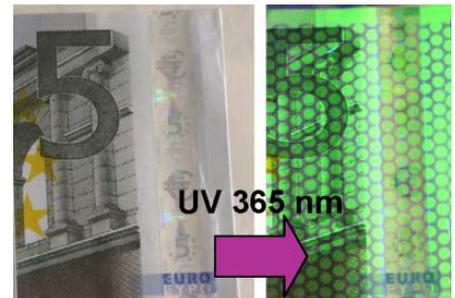
Tagging of any material, including paper

The technique used for the tag manufacture is the plasma polymerization, never used before for that purpose. The layer is deposited in vacuum by sublimating a dye in the downstream region of a plasma. The plasma interaction produces the fragmentation of a dye molecules fraction. Finally, the molecules deposition on a substrate creates a polymeric nanometer thick layer with unique luminescent properties. These properties allow, using a laser, to record micrometer scale patterns that become visible under illumination at specific wavelength.

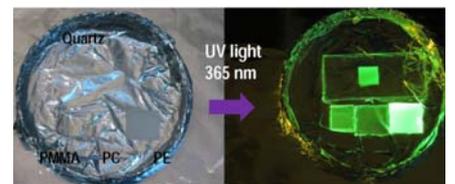
Layer deposition by plasma polymerization technology can be used on any kind of material, even as sensitive as paper or plastic, without causing any damage. The layers to be recorded can be designed to make the information visible to the desired light wavelength, for example, visible under natural light or only when illuminated with ultraviolet light, as required by the specific application.

Main applications and advantages

- Simple procedure of fabrication that allows a high control of the deposited layer properties.
- High complexity patterns and large amount of information can be recorded, down to micron-size. Even encrypted tags can be created using codes randomly generated, useful in anti-fraud and anti-theft applications.
- Tags can be applied to many types of materials (paper, plastic, ceramics, glass, metal, etc.), surface forms and sizes, without damage, so valuable or delicate can be also tagged.
- The information recorded can be easily modified and updated, useful for tracking goods.
- Light type that makes visible the information can be selected. It's possible to manufacture a tag that absorbs ultraviolet light and emits visible light or vice versa, allowing the creation of invisible tags.
- The recording can be performed using cheapest laser sources such as LEDs.
- More than one layer can be created allowing the recording of different patterns on each of them, increasing the amount of information.
- Manufacturing costs are reduced compared to the currently used techniques such as RFID or holograms.



Label on which high-quality information can be recorded, such as bar codes, encrypted information, drawings and photonic structures, at micrometer scale and on any kind material, without damage.



Patent Status

European patent application filed. Priority established by a Spanish patent application.

For further information please contact

Ana García Navarro, Ph.D.

Material Sciences Area
Deputy Vice-Presidency for
Knowledge Transfer

Spanish National Research Council
(CSIC)

Tel.: + 34 – 95 448 95 27

Fax: + 34 – 95 446 06 65

E-mail: ana.garcia@icmse.csic.es

