



ISTITUTO ITALIANO
DI TECNOLOGIA

TITLE

Improved method for the manufacture of three-dimensional hollow nanostructures

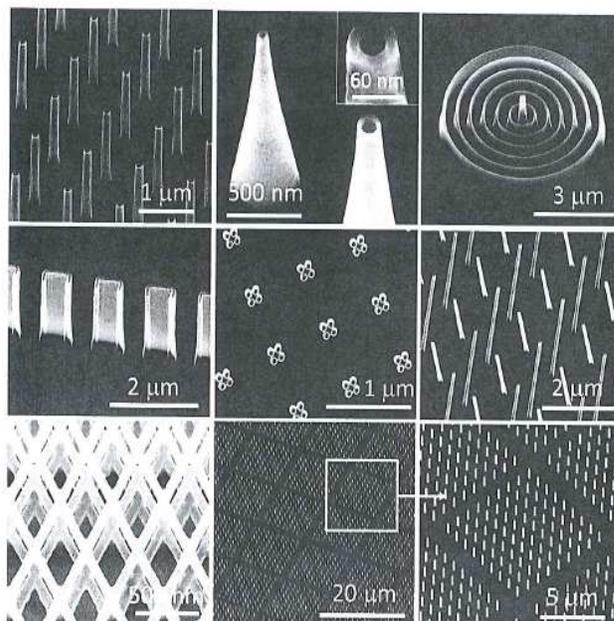
INVENTORS

Francesco De Angelis, Mario Malerba

DESCRIPTION

The invention relates to a process for the manufacture of three-dimensional hollow nanostructures , comprising:

- the deposition of a layering of support of a sacrificial layer of resist adapted to vary its default feature solubility for exposure to a radiation accident;
- the erosion of at least a region of volume predetermined sacrificial layer to form a corresponding cavity of controlled nanometer size extended in depth along a predetermined direction of erosion, in which the erosion of the predetermined volume region of the sacrificial layer is carried out for etching through an adapted ion beam to generate locally , by effect of collision with a sacrificial layer in an area of the inner surface of the cavity, a dose of secondary electrons such as to cause a confined exposure of the resist and consequently determine a greater insolubility than the default feature solubility in the wall region of the cavity to a depth equal to the free mean path of secondary electrons ;
- the removal of the sacrificial layer of the resist with the default characteristic of solubility , for which the wall region of the exposed cavity form a quarry residual nanostructure



APPLICATIONS

Photonics, electrochemical catalysis, metamaterials, photovoltaics, microfluidics, nanomedicine, neuroscience

KEYWORDS

Nanostructures, hollow, three-dimensional, plasmonics

BIBLIOGRAPHIC DATA

Procedimento perfezionato per la fabbricazione di nanostrutture tridimensionali cave

Application Number

IT TO2013A000552

Priority Date

July 2, 2013

Applicants

Fondazione Istituto Italiano di Tecnologia

CONTACTS

Technology Transfer Office

Augusta Galano

+39 010 71781 568

augusta.galano@iit.it

Fondazione Istituto Italiano di Tecnologia - Italian Institute of Technology

Sede Legale: Via Morego, 30 16163 Genova Uffici di Roma: Via Guidubaldo del Monte, 54 00197 Roma

Tel. 010 71781 Fax. 010 720321

C.F. 97329350587 – P.I. 09198791007