LICENSING OPPORTUNITY: MULTIDIMENSIONAL PRINTER

DESCRIPTION

Problem

Current state of the art e-beam and X-ray lithography requires vacuum conditions and therefore dry samples what restricts the ability to perform beam induced additive printing in a continuous process.

Invention

In our invention, the electron or X-ray beam penetrates in to the liquid from the vacuum after passing through the ultra thin separating membrane and crosslinks the polymer molecules in the liquid solution within the interaction volume. Additive layer-by-layer fabrication can be achieved via electrochemical delamiation of the prior layer from the separating membrane.

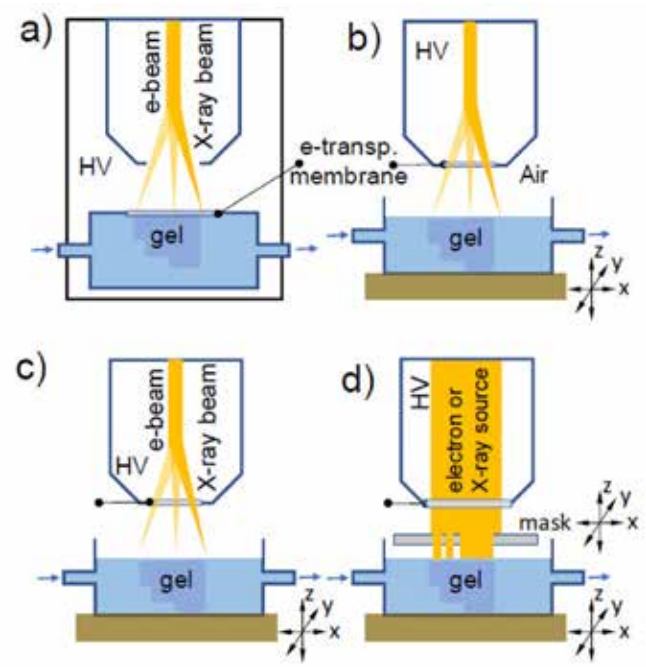
BENEFITS

Commercial Application

Applications in individual bio-cells interfacing with gel contacts, nanoscale tissue engineering, soft robotics, bio-sensing, drug delivery, wounds treatment and biomedical research, etc.

Competitive Advantage

The key advantage of the method compared to prior dry gel patterning is the ability to micropattern gel solution in its liquid state with nanoscopic resolution.



a) Liquid gel precursor is enclosed inside the chamber capped with electron transparent membrane.
b) High vacuum inside microscope is preserved by electron transparent membrane and the liquid is under ambient conditions.
c) Focused beam irradiation for addressable cross-linking.
d) Nano-parterning via broad beam irradiation through the mask.

Contact: licensing@nist.gov

NIST TECHNOLOGY PARTNERSHIPS OFFICE

NIST Technology Partnerships Office
National Institute of Standards and Technology
100 Bureau Drive, Gaithersburg, MD 20899-2200