FLUID-JET PENS CONFIGURED FOR MAKING MODULATED RELEASE BIOLOGICAL AGENTS

ABSTRACT OF THE DISCLOSURE

The present invention is drawn to methods of preparing a bioactive agent-containing emulsion for delivery to a biological system. This method can comprise the step of jetting a bioactive agent (14) and a first fluid medium (28) from a fluid-jet pen into a second fluid medium to form a bioactive agent-containing emulsion, wherein the second fluid (44) comprises a continuous phase of the emulsion (34). Alternatively, a method of preparing a bioactive agent-containing liposome can comprise jetting a lipid-containing composition (62) and a bioactive agent (70) from a fluid-jet pen into a medium (104) to form a bioactive agent-containing liposome carried by the medium. The present invention is also drawn to fluid-jet pens and systems configured for making liposome- and emulsion-containing biological agents.

(FIG. 1)