meter and a first interaction material patterned therein, and flowing a fluid comprising a second interaction material into the fluid path to allow interaction between the first and second interaction materials.

[0016] In another embodiment, the present invention is directed to gradient generation apparatus including at least first, second, and third fluid paths, each having a cross-section of less than one millimeter, the second and third fluid paths each comprising a mixing region. The apparatus also includes a first inlet fluidly connected to the first and second fluid paths and a second inlet fluidly connected to the second and third fluid paths. The apparatus further includes a first connecting path fluidly connected to the second fluid path downstream of its mixing region and fluidly connected to the third fluid path upstream of its mixing region.

[0017] In another embodiment, the present invention is directed to a method. The method includes flowing a first fluid into a first channel, flowing a second fluid into a second channel, mixing at least a portion of the first fluid with a portion of the second fluid in a third channel to form a third fluid, mixing at least a portion of the third fluid with a portion of the second fluid to form a fourth fluid, flowing the third fluid past a first sensor, and flowing the fourth fluid past a second sensor.

[0018] In another embodiment, the present invention is directed to an apparatus. The apparatus may include at least first, second, and third fluid paths each having an inlet end and a region downstream from the inlet end, the inlet of the first fluid path being fluidly connectable to a first source of fluid, the inlets of the second and third fluid paths being fluidly connectable to a second source of fluid, a first connecting path fluidly connecting the first fluid path and the second fluid path downstream of the inlet end of each, and a second connecting path fluidly connecting the second fluid path and the third fluid path downstream of the inlet end of each and downstream of the connection of the second fluid path to the first connecting path.

[0019] In another embodiment, the present invention is directed to a method. The method includes flowing a first fluid in a first channel and a second fluid in a second channel and in a third channel, mixing at least a portion of the first fluid with the second fluid in the second channel to produce a third fluid, and mixing at least a portion of the third fluid with the second fluid in the third channel to produce a fourth fluid.

[0020] Other advantages, novel features, and objects of the invention will become apparent from the following detailed description of the invention when considered in conjunction with the accompanying drawings, which are not intended to be drawn to scale and some of which are schematic. In the figures, each identical or nearly identical component that is illustrated in various figures is represented by a single numeral. For purposes of clarity, not every component is labeled in every figure, nor is every component of each embodiment of the invention shown where illustration is not necessary to allow those of ordinary skill in the art to understand the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

[0021] **FIG. 1** is perspective, plan view of a fluidic system according to one embodiment of the present invention;

[0022] **FIG. 2** is perspective, plan view of a fluidic system according to another embodiment of the present invention;

[0023] **FIG. 3** is perspective, exploded view of a fluidic system according to another embodiment of the present invention;

[0024] **FIG. 4** is perspective, exploded view of a fluidic system according to another embodiment of the present invention;

[0025] **FIG. 5** is photocopy of a photograph of a fluidic system according to another embodiment of the present invention;

[0026] **FIG. 6** is photocopy of a photomicrograph of one aspect of a fluidic system according to another embodiment of the present invention;

[0027] **FIG. 7** is photocopy of a photomicrograph of another aspect of a fluidic system according to another embodiment of the present invention;

[0028] **FIG. 8** is a top, plan view of a fluidic system according to another embodiment of the present invention including a photocopy of a photomicrograph of a portion of such a fluidic system;

[0029] **FIG. 9** is a top, plan view of a fluidic system according to another embodiment of the present invention including a photocopy of a photomicrograph of a portion of such a fluidic system;

[0030] **FIG. 10** is a perspective, plan view of a fluidic system according to another embodiment of the present invention;

[0031] **FIG. 11** is a photocopy of a photomicrograph of the embodiment of **FIG. 10**;

[0032] **FIG. 12** is a perspective, plan view of a fluidic system according to another embodiment of the present invention;

[0033] **FIG. 13** is a top, plan view of a fluidic system according to another embodiment of the present invention;

[0034] **FIG. 14** is a photocopy of a photomicrograph of one aspect of the embodiment of **FIG. 13**;

[0035] **FIG. 15** is a photocopy of a photomicrograph of another aspect of the embodiment of **FIG. 13**;

[0036] **FIG. 16** is a top, plan view of a fluidic system according to another embodiment of the present invention;

[0037] **FIG. 17** section (a) is a top, plan view of a fluidic system according to another embodiment of the present invention, section (b) is an enlarged, plan view of a portion the embodiment of section (a), and section (c) is an enlarged, exploded view of a portion the embodiment of section (a);

[0038] **FIG. 18** section (a) is an exploded view of a fluidic system according to another embodiment of the present invention, section (b) is a perspective view of another aspect of the embodiment of section (a), and section (c) is a perspective view of another aspect of the embodiment of section (a);

[0039] **FIG. 19** is a perspective view of a fluidic system according to another embodiment of the present invention;