That which is claimed is:

1. A process for making fluid delivery in flow-injection based sensing measurements, wherein samples are introduced into a flow cell where sensing measurements are taken, the process comprising:

(a) loading a first sample into a first holding line;

(b) injecting the first sample from the first holding line into the flow cell;

(c) loading a second sample into a second holding line, wherein said second sample is loaded simultaneously with step (b);

(d) injecting said second sample from the second holding line into the flow cell;

(e) loading a third sample into the first holding line, wherein the third sample is loaded simultaneously with step (c);

(f) continuing the loading and the injecting of samples by alternatively loading samples into the first holding line and second holding line and by simultaneously loading one sample while the other sample is being injected into the flow cell,

wherein the loading of the samples into the first holding line and the second holding line is through a first multiport valve and the injecting of the samples to the flow cell is through the first multiport valve and a second multiport valve, wherein the second multiport valve has a first position and a second position such that:

when the second multiport valve is in the first position, a buffer solution can be introduced into the flow cell; and

when the second multiport valve is in the second position, one of the samples from the first holding line or the second holding line can be introduced through the first multiport valve and the second multiport valve, wherein the samples pass through a

dispersion loop situated between the first multiport valve and the second multiport valve, and the dispersion loop forms a gradient in concentration of the sample prior to injection of the sample to the flow cell.

2. A process for fluid delivery in flow-injection based sensing measurements, wherein samples from a sample rack are introduced into a flow cell where sensing measurements are taken, the process comprising:

(a) providing at least two holding lines where each holding line can retain one of the samples prior to injection of the thus retained sample into a flow cell;

(b) alternating between the holding lines the introduction of the samples from the sample racks to the holding lines; and

(c) alternating the injection of the samples from the holding lines to the flow cell, wherein one holding line is loaded with one of the samples simultaneously with another sample being injected from the another holding line to the flow cell.

Said process further comprising:

extracting the samples from the sample racks by a probe;

introducing the samples from the probe to the holding lines through a first multiport valve; and

introducing the samples from the holding line to the flow cell through the first multiport valve and a second multiport valve, wherein the samples pass through a dispersion loop situated between the first multiport valve and the second multiport valve, and the dispersion loop forms a gradient in concentration of the sample prior to injection of the sample to the flow cell.

3. The process of claim 2, wherein:

there are no more than two holding lines;

the first multiport valve has a first position and a second position such that:

when the first multiport valve is in the first position, a first holding line is in fluid flow communication with the second multiport valve and a second holding line is in fluid flow communication with the probe; and

when the first multiport valve is in the second position, the first holding line is in fluid flow communication with the probe and the second holding line is in fluid flow communication with the second multiport valve; and

the second multiport valve has a first position and a second position such that:

when the second multiport valve is in the first position, a buffer solution can be introduced into the flow cell; and

when the second multiport valve is in the second position, one of the samples from one of the holding lines can be introduced from the first multiport valve to the flow cell through the second multiport valve.

4. The process of claim 3 having the following steps:

(i) placing the first multiport valve in the second position;

(ii) introducing one of the samples from the sample racks to the first holding line through the probe and the first multiport valve;

(iii) placing the first multiport valve in the first position and the second multiport valve in the second position;

(iv) after step (iii) introducing the sample from the first holding line to the flow cell through the first multiport valve and the second multiport valve while simultaneously introducing another of the samples from the sample racks to the second holding line through the probe and the first multiport valve;

(v) placing the second multiport valve in the first position;

(vi) subsequent to step (iv), introducing the buffer solution from the buffer storage to the wash station through the first multiport valve and the probe;

(vii) subsequent to step (v), introducing the buffer solution from the buffer storage to a wash station through the second multiport valve and the flow cell;

(viii) subsequent to step (vii), placing the first multiport valve in the second position and the second multiport valve in the second position;

(ix) subsequent to step (viii), introducing the sample from the second holding line to the flow cell through the first multiport valve and the second multiport valve while simultaneously introducing another of the samples from the sample racks to the first holding line through the probe and the first multiport valve;

(x) placing the second multiport valve in the first position;

(xi) subsequent to step (ix), introducing the buffer solution from the buffer storage to the wash station through the first multiport valve and the probe; and

(xii) subsequent to step (x), introducing the buffer solution from the buffer storage to a wash station through the second multiport valve and the flow cell.

5. The process of claim 4, further comprising repeating steps (i) through (xii) until a predetermined number of the samples in the sample racks have been introduced into the flow cell.

6. A fluid delivery system for an apparatus for making flow-injection based sensing measurements comprising:

a flow cell from which sensing measurements can be taken;

a first holding line;

a second holding line;

a probe through which a plurality of samples are introduced into the fluid delivery system;

a first multi-port valve having a first position and a second position, wherein the first multi-port valve is in fluid flow communication with the probe, the first holding line, and the second holding line; and

a second multi-port valve having a first position and a second position, wherein the second multi-port valve is in fluid flow communication with the first multi-port valve and the flow cell; and

wherein, when the first multi-port valve is in the first position and the second multi-port valve is in the second position, one of the samples can be introduced from the first holding line to the flow cell simultaneously with another of the samples being introduced from the probe to the second holding line; and, when the first multi-port valve is in the second position and the second multi-port valve is in the second position, one of the samples can be introduced from the second holding line to the flow cell simultaneously with another of the samples being introduced from the probe to the first holding line.

7. The fluid delivery system of claim 6, further comprising:

a first pump in fluid flow communication to a buffer storage and the first holding line; and

a second pump in fluid flow communication to the buffer storage and the second holding line.

8. The fluid delivery system of claim 6, further comprising:

a buffer storage;

a first buffer line in fluid flow communication with the buffer storage and the second multi-port valve such that the second valve can receive buffer solution from the first buffer line and, when the second valve is in the first position, the second valve can introduce

the buffer solution to the flow cell and, when the second valve is in the second position, the second valve can introduce buffer solution to the probe; and

a second buffer line in fluid flow communication with the buffer storage and the second multi-port valve that the second valve can receive buffer solution from the second buffer line and, when the second valve is in the first position, the second valve can introduce the buffer solution to the flow cell and, when the second valve is in the second position, the second valve can introduce buffer solution to the probe.

9. The fluid delivery system of claim 8, further comprising:

a first pump in fluid flow communication to the buffer storage, the first holding line and the first buffer line; and

a second pump in fluid flow communication to the buffer storage, the second holding line and the second buffer line.

10. The fluid delivery system of claim 9, wherein:

when the first multi-port valve is in the first position and the second multi-port valve is in the first position, the first pump can provide buffer fluid from the buffer storage to the probe through first holding line, the first multi-port valve and the second multi-port valve; and

when the first multi-port valve is in the second position and the second multi-port valve is in the first position, the second pump can provide buffer fluid from the buffer storage to the probe through the second holding line, the first multi-port valve and the second multi-port valve.

11. The fluid delivery system of claim 10, further comprising:

a third buffer line in fluid flow communication with the first pump and the first multi-port valve such that, when the first multi-port valve is in the first position, the first

pump can introduce buffer solution from the buffer storage to the probe through the first multi-port valve; and

a fourth buffer line in fluid flow communication with the second pump and the first multi-port valve such that, when the first multi-port valve is in the second position, the second pump can introduce buffer solution from the buffer storage to the probe through the first multi-port valve.

12. The process of claim 11, further comprising a dispersion loop situated between the first multiport valve and the second multiport valve, wherein the samples pass through the dispersion loop and the dispersion loop forms a gradient in concentration of the sample prior to injection of the sample to the flow cell.