WHAT IS CLAIMED IS:

1. A turbidity sensor comprising:

a quasi-collimated light source having a length and being configured to provide quasi-collimated light to a liquid sample that causes gradient light to scatter and reflect transversely off suspended matter in the liquid sample along the length of the collimated light source;

a linear sensor array having rows and columns of optical elements and configured to sense the gradient light scattered and reflected transversely off the suspended matter in the liquid sample along the length of the collimated light source and provide signaling containing information about the gradient light sensed; and

a signal processor or processing module configured to:

receive the signaling; and

determine corresponding signaling containing information about a concentration of turbidity of the liquid sample that spatially depends on an attenuation of the gradient light sensed across the linear sensor array and along the length of the collimated light source, based upon the signaling received.

2. A turbidity sensor according to claim 1, wherein the linear sensor array comprises a linear photodiode array, a linear CCD array, or a linear CMOS array.

3. A turbidity sensor according to claim 1, wherein the linear sensor array comprises a closed cylinder sensor array having a three-dimensional cylindrical array of the rows and columns of the optical elements.

4. A turbidity sensor according to claim 1, wherein the signal processor or processing module is configured to determine the turbidity based upon an attenuation of an optical signal sensed across the linear sensor array, including along the length and width of the linear sensor array.

5. A turbidity sensor according to claim 1, wherein the signal processor or processing module is configured to determine the turbidity based upon a spatial gradient of an optical signal sensed across the linear sensor array that contains information about the concentration of the turbidity.

6. A turbidity sensor according to claim 1, wherein the linear sensor array comprises a two-dimensional array of the optical elements that are individually addressable.

7. A turbidity sensor according to claim 6, wherein the optical elements are individually addressable by the signal processor or processing module.

8. A turbidity sensor according to claim 6, wherein

either the rows or the columns of the optical elements are connected in parallel and addressable by the signal processor or processing module;

the turbidity sensor includes a transmission photodiode located at an end of the linear sensor array, opposite the light source, configured to respond to the light reflected off the suspended matter and provide transmission photodiode signaling containing information about the same; and

the signal processor or processing module is configured to receive the photodiode signaling and correct the corresponding signaling for drift or an inner filter effect.

9. A method for determining a concentration of turbidity, comprising:

providing quasi-collimated light to a liquid sample with a quasi-collimated light source having a length that causes gradient light to scatter and reflect transversely off suspended matter in the liquid sample along the length of the collimated light source;

sensing the gradient light scattered and reflected transversely off the suspended matter in the liquid sample along the length of the collimated light source with a linear sensor array having rows and columns of optical elements;

providing signaling containing information about the gradient light sensed;

receiving, with a signal processor or processing module, the signaling; and

determining, with the signal processor or processing module, corresponding signaling containing information about a concentration of a parameter of the liquid sample that spatially depends on an attenuation of the gradient light sensed across the linear sensor array and along the length of the collimated light source, based upon the signaling received.

10. A method according to claim 9, wherein the method comprises configuring the linear sensor array as a linear photodiode array, a linear CCD array, or a linear CMOS array.

11. A method according to claim 9, wherein the method comprises configuring the linear sensor array as a closed cylinder sensor array having a three-dimensional cylindrical array of the rows and columns of the optical elements.

12. A method according to claim 9, wherein the method comprises determining with the signal processor or processing module the parameter based upon an attenuation of an optical signal sensed across the linear sensor array, including along the length and width of the linear sensor array.

13. A method according to claim 9, wherein the method comprises determining with the signal processor or processing module the turbidity based upon a spatial gradient of an optical signal sensed across the linear sensor array that contains information about the concentration of the turbidity.

14. A method according to claim 9, wherein the method comprises configuring the linear sensor array as a two-dimensional array of the optical elements that are individually addressable.

15. A method according to claim 14, wherein the method comprises configuring the signal processor or processing module and the optical elements so that the optical elements are individually addressable by the signal processor or processing module.

16. A method according to claim 14, wherein the method comprises

connecting either the rows or the columns of the optical elements in parallel and addressable by the signal processor or processing module;

locating a transmission photodiode at an end of the linear sensor array, opposite the light source to respond to the light reflected off the suspended matter and provide transmission photodiode signaling containing information about the same; and

configuring the signal processor or processing module to receive the photodiode signaling and correct the corresponding signaling for drift or an inner filter effect.