CLAIMS:

1. An image sensor comprising:

a pixel array comprising pixel array circuitry;

a read path comprising read path circuitry; and

a capacitive element and a capacitive enable circuit configured to enable the capacitive element to vary a capacitance provided to a pixel of the pixel array,

wherein the pixel array is configured to selectively implement the capacitive element and the capacitive element enable circuit in different pixels and/or different areas of the pixel array; and

wherein the pixel array comprises a number of selectable pixel types comprising at least two of the following pixel types: higher sensitivity to electrons pixel types, pixel types implementing electrical shielding, pixel types implementing similar sensitivity to electrons with different sensitivity to photons, and/or pixel types having reduced sensitivity to electrons.

2. The image sensor according to claim 1 wherein the pixel array is configured to vary a capacitance provided to pixel of the pixel array utilizing one of the following implementations: a checkerboard implementation implementing high and/or low capacitance, implementation of arbitrary regions having different capacitances, and an alternate column implementation implementing high and/or low capacitance.

3. The image sensor according to claim 1 further comprising a temperature sensor,

wherein the temperature sensor comprises a thermometer pixel.

4. The image sensor according to claim 1 wherein the pixel array comprises a number of selectable pixel characteristics.

5. An image sensor comprising:

a pixel array comprising pixel array circuitry;

a read path comprising read path circuitry; and

a capacitive element and a capacitive enable circuit configured to enable the capacitive element to vary a capacitance provided to a pixel of the pixel array,

wherein the pixel array is configured to selectively implement the capacitive element and the capacitive element enable circuit in different pixels and/or different areas of the pixel array;

wherein the pixel array comprises a number of selectable pixel characteristics; and

wherein the selectable pixel characteristics comprise at least two of the following: a different amplification level, a different bandwidth, a different sensitivity to temperature, a different sensitivity to x-ray interaction, a different response to electrons, a different response to protons, a different range of photon wavelengths, and/or different sensitivities to wavelengths within a range.

6. The image sensor according to claim 5

wherein the pixel array comprises a number of selectable pixel types comprising at least two of the following pixel types: higher sensitivity to electrons pixel types, pixel types implementing electrical shielding, pixel types implementing similar sensitivity to electrons with different sensitivity to photons, and/or pixel types having reduced sensitivity to electrons.

7. An image sensor comprising:

a pixel array comprising pixel array circuitry;

a read path comprising read path circuitry; and

a temperature sensor,

wherein the temperature sensor is implemented as a transistor.

8. The image sensor according to claim 7 wherein the pixel array comprises a number of selectable pixel characteristics.

9. The image sensor according to claim 7 wherein the temperature sensor comprises a thermometer pixel.

10. The image sensor according to claim 7 further comprising:

a capacitive element and a capacitive enable circuit configured to enable the capacitive element to vary a capacitance provided to a pixel of the pixel array.

11. The image sensor according to claim 10 wherein the capacitive element enable circuit is configured to connect the capacitive element to a photodiode of the pixel array.

12. The image sensor according to claim 10 wherein the pixel array is configured to selectively implement the capacitive element and the capacitive element enable circuit in different pixels and/or different areas of the pixel array.

13. The image sensor according to claim 10 wherein the pixel array is configured to vary a capacitance provided to pixel of the pixel array utilizing one of the following implementations: a checkerboard implementation implementing high and/or low capacitance, implementation of arbitrary regions having different capacitances, and an alternate column implementation implementing high and/or low capacitance.

14. An image sensor comprising:

a pixel array comprising pixel array circuitry;

a read path comprising read path circuitry; and

a temperature sensor,

wherein the pixel array comprises a number of selectable pixel types comprising at least two of the following pixel types: higher sensitivity to electrons pixel types, pixel types implementing electrical shielding, pixel types implementing similar sensitivity to

electrons with different sensitivity to photons, and/or pixel types having reduced sensitivity to electrons.

15. The image sensor according to claim 14 wherein the temperature sensor is implemented as a transistor.

16. An image sensor comprising:

a pixel array comprising pixel array circuitry;

a read path comprising read path circuitry; and

a temperature sensor;

wherein the pixel array comprises a number of selectable pixel characteristics; and

wherein the selectable pixel characteristics comprise at least two of the following: a different amplification level, a different bandwidth, a different sensitivity to temperature, a different sensitivity to x-ray interaction, a different response to electrons, a different response to protons, a different range of photon wavelengths, and/or different sensitivities to wavelengths within a range.

17. An image sensor comprising:

a pixel array comprising pixel array circuitry; and

a read path comprising read path circuitry,

wherein the pixel array comprises a number of pixel types comprising at least two of the following pixel types: higher sensitivity to electrons pixel types, pixel types

implementing electrical shielding, pixel types implementing different ratios of electron and photon sensitivities, and/or pixel types having reduced sensitivity to electrons.

18. The image sensor according to claim 17 wherein the pixel array is configured to measure an x-ray independently of an electron flux by comparing a response from two pixels with a different ratio of electron response to photon response.

19. The image sensor according to claim 17 further comprising a temperature sensor,

wherein the temperature sensor comprises a thermometer pixel.

20. The image sensor according to claim 17 further comprising:

a capacitive element and a capacitive enable circuit configured to enable the capacitive element to vary a capacitance provided to a pixel of the pixel array.

21. The image sensor according to claim 20 wherein the capacitive element enable circuit is configured to connect the capacitive element to a photodiode of the pixel array.

22. The image sensor according to claim 20 wherein the pixel array is configured to selectively implement the capacitive element and the capacitive element enable circuit in different pixels and/or different areas of the pixel array.

23. The image sensor according to claim 20 wherein the pixel array is configured to vary a capacitance provided to pixel of the pixel array utilizing one of the following implementations: a checkerboard implementation implementing high and/or low capacitance, implementation of arbitrary regions having different capacitances, and an alternate column implementation implementing high and/or low capacitance.

24. The image sensor according to claim 17 wherein the pixel array comprises a number of selectable pixel characteristics.

25. The image sensor according to claim 24 wherein the selectable pixel characteristics comprise at least two of the following: a different amplification level, a different bandwidth, a different sensitivity to temperature, a different sensitivity to x-ray interaction, a different response to electrons, a different response to protons, a different range of photon wavelengths, and/or different sensitivities to wavelengths within a range.

26. An image sensor comprising:

a pixel array comprising pixel array circuitry;

a read path comprising read path circuitry; and

wherein the pixel array comprises a number of selectable pixel characteristics; and

wherein the selectable pixel characteristics comprise at least two of the following: a different amplification level, a different bandwidth, a different sensitivity to

temperature, a different sensitivity to x-ray interaction, a different response to electrons, a different response to protons, a different range of photon wavelengths, and/or different sensitivities to wavelengths within a range.

27. The image sensor according to claim 26 further comprising a temperature sensor,

wherein the temperature sensor comprises a thermometer pixel.

28. The image sensor according to claim 26 further comprising:

a capacitive element and a capacitive enable circuit configured to enable the capacitive element to vary a capacitance provided to a pixel of the pixel array.

29. The image sensor according to claim 28 wherein the capacitive element enable circuit is configured to connect the capacitive element to a photodiode of the pixel array.

30. The image sensor according to claim 28 wherein the pixel array is configured to selectively implement the capacitive element and the capacitive element enable circuit in different pixels and/or different areas of the pixel array.

31. The image sensor according to claim 28 wherein the pixel array is configured to vary a capacitance provided to pixel of the pixel array utilizing one of the

following implementations: a checkerboard implementation implementing high and/or low capacitance, implementation of arbitrary regions having different capacitances, and an alternate column implementation implementing high and/or low capacitance.

32. An image sensor comprising:

a pixel array comprising pixel array circuitry;

a read path comprising read path circuitry; and

wherein the pixel array comprises a number of selectable pixel characteristics; and

wherein the pixel array comprises a number of selectable pixel types comprising at least two of the following pixel types: higher sensitivity to electrons pixel types, pixel types implementing electrical shielding, pixel types implementing similar sensitivity to electrons with different sensitivity to photons, and/or pixel types having reduced sensitivity to electrons.

33. The image sensor according to claim 32 wherein the selectable pixel characteristics comprise at least two of the following: a different amplification level, a different bandwidth, a different sensitivity to temperature, a different sensitivity to x-ray interaction, a different response to electrons, a different response to protons, a different range of photon wavelengths, and/or different sensitivities to wavelengths within a range.