What is claimed is:

1. A method comprising:

generating frequency-encoded fluorescence data from a particle of a sample in a flow stream; and

calculating phase-corrected spatial data of the particle by performing a transform of the frequency-encoded fluorescence data with a phase correction component.

2. The method according to claim 1, wherein the phase-corrected spatial data is calculated by performing a Fourier transform of the frequency-encoded fluorescence data with the phase correction component or with a digital lock-in amplifier to heterodyne and de-multiplex the frequency-encoded fluorescence data.

3. The method according to claim 2, wherein the phase-corrected spatial data is calculated by performing a discrete Fourier transform of the frequency-encoded fluorescence data with the phase correction component or performing a short time Fourier transform (STFT) of the frequency-encoded fluorescence data with the phase correction component.

4. The method according to any one of claims 1-3, wherein the phase correction component comprises modified transform coefficients that are used to transform the frequency-encoded fluorescence data into the phase-corrected spatial data.

5. The method according to any one of claims 1-4, wherein generating the frequency-encoded fluorescence data from the particle comprises detecting light from the particle in the sample with a light detection system.

6. The method according to claim 5, wherein the light detected from the particle comprises light absorption, light scatter, emitted light or a combination thereof.

7. The method according to any one of claims 1-6, wherein the phase correction component comprises a first phase adjustment and a second phase adjustment.

8. The method according to claim 7, wherein the first phase adjustment comprises an output signal from the light detection system, the method further comprising calculating the first phase adjustment by:

multiplying an output signal from the brightfield photodetector with a predetermined constant signal to produce a phase adjustment value; and

calculating an arctangent of the phase adjustment value to generate the first phase adjustment.

9. The method according to any one of claims 8, wherein the first phase adjustment is an interferometric phase adjustment.

10. The method according to any one of claims 9, wherein the interferometric phase adjustment comprises a phase shift resulting from vibrations between components of the light source.

11. The method according to any one of claims 7, further comprising calculating the second phase adjustment based on a fluorescence lifetime of a fluorophore in the sample.

12. The method according to any one of claims 1-11, wherein the phase-corrected spatial data of the particle is calculated from the frequency-encoded fluorescence data by an integrated circuit device.

13. The method according to any one of claims 1-12, further comprising generating an image of the particle from the phase-corrected spatial data.

14. A system comprising:

a light source configured to irradiate a sample comprising particles in a flow stream;

a light detection system; and

a processor comprising memory operably coupled to the processor wherein the memory comprises instructions stored thereon, which when executed by the processor, cause the processor to:

generate frequency-encoded fluorescence data from a particle in the flow stream;

calculate phased-corrected spatial data of the particle by performing a transform of the frequency-encoded fluorescence data with a phase correction component.

15. An integrated circuit programmed to:

generate frequency-encoded fluorescence data from a particle in a flow stream;

calculate phase-corrected spatial data of the particle by performing a transform of the frequency-encoded fluorescence data with a phase correction component.