NTNU
Kunnskap for en bedre verden

Department of Physics

TFY4335 - Bionanoscience

Determination of diffusion constant and size of micro- and nanoparticles

Author:
Martin Kollstrand, Knut Hellestveit

October, 2024

1 Introduction

2 Method

2.1 Apparatus

2.1.1 Apparatus Apparatus used in the ISO7 section in NanoLab at NTNU. The apparatus used in the experiment are listed below:

- Optical microscope with camera by Zeiss Primo Star
- Dark field ring filter
- 10 micrometre micropipette
- C-Chip Hemocytometer
- White paint samples, for sample A and sample B
- Erioglaucine (food dye)
- Microfluidic chip, custom made using soft lithography
- Deionized water
- Syringe pump
- Syringes
- Microtubes

2.2 Softwares

2.1.2 Softwares Softwares used in data capture and data processing:

- Zen software
- ImageJ
- TrackPy

2.3 Experimental Procedure

2.2 Experimental Procedure

2.2.1 Optical microscope calibration

1. Adjust the optical microscope using Köhler illumination principle for optimal contrast and clarity.
2. Calibrate the microscope according to the Zeiss Primo Star user guidelines.

2.2.2 Tracking particles to estimate Brownian motion and diffusion constant:

- Prepare a small sample of white paint containing microparticles (latex and nanoparticles) by spreading a thin layer on a glass slide.
- Place the sample under the optical microscope.

2.4 Processing of data

3 Results

4 Discussion

5 Conclusion

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References

[1] First Author. *Title of the Book*. Publisher Name, Publisher Address, 2020.