

Contents

1. Introduction	9
1.1. Theoretical background	10
2. Experimental setup	15
2.1. Optical Tweezers setup	15
2.2. Materials.....	27
3. Experiments and discussions	29
3.1. Laser alignment procedure	29
3.2. Calibration.....	31
3.2.1. Detection system calibration.....	32
3.2.2. External Force Calibration.....	36
3.2.3. Equipartition Calibration	39
3.3. Optical tweezers atomic force microscopy double probing	41
3.4. Atomic force microscopy and optical tweezers double probe force sensor.....	43
4. Conclusions and outlook	47
Bibliography	51
Index	55