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particles can be effectively tracked, the applications such as particle velocimetry can also be developed using this technique. This technique can also be extended to a mobile pathology lab by using a cell phone camera instead of an optical microscope for observing and counting objects as small as 10 μm.

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The shape and size of these lenses can be controlled using the weight of the pellets, the molecular weight of the polymer, and the temperature of the oven. The smaller the pellet used smaller the lens with high curvature, and higher magnification is obtained. Increasing molecular weight increased the curvature of the lenses and hence magnification. The temperature was having a very small impact on the final shape of the lens however the time taken to form the lens is dependent on the temperature of the oven. These lenses were used as a lens attachment to the camera as well as kept near the object and focused through the camera to observe a 435PPI pixel pattern. It was shown that when the lens was kept at the camera as an attachment it has a high field of view and low aberration in the image. While keeping these lenses near objects and focusing through the camera gives high resolution and magnification with a lower field of view. More clarity in the image is observed when the lens is kept near the object when compared to the lens attached to the cellphone camera. lenses are found to be free from chromatic aberration, as red green, and blue colors are clearly distinguishable. Different type of distortions in images and their possible solution is proposed which can be explored later. These lenses are capable to resolve less than 50μm and showed their promising application in point care biomedical imaging devices.

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to the analysis of CV a dye under continuous flow conditions along with silver nanoparticles (AgNPs). The optimized device design configuration for Raman analysis was found to be D3 at the downstream length of 7.2mm. Mixing was also demonstrated to be enhanced along with the downstream of the device. Results were in line with the simulation results and it was found that increasing the bending ratio (A/λ) of the zigzag microchannel in the device, gave better mixing between silver nanoparticles and the target analyte. The limit of detection of the device for crystal violet dye, uric acid was found to be 8.9×10^{-11} M and 3.2×10^{-8} M with a 20X objective. The device was demonstrated to be selective towards a mixture of lactic acid and uric acid biomarkers and was reproducible and repeatable. Working at a lower magnification of the Raman spectrophotometer allows the device to be used in a robust and portable setup. The fabricated device shows potential features to be developed as point-of-care diagnosis equipment.

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A. APPENDIX:

PUBLICATION IN REFERRED AND PEER-REVIEWED JOURNALS

Table 6. 1 Publication from thesis' work.

S. N.	Publication	Impact Factor
1	**S. Mishra, Manish M. Kulkarni, A. Verma, "High-Resolution Imaging and Fast Number Estimation of Suspended Particles Using Dewetted Polymer Microlenses In a Microfluidic Channel" in Micron Journal, Micron 151 (2021) 103148 doi:** doi.org/10.1016/j.micron.2021.103148**.**	**1.527**
2	**S. Mishra, S. Goel and Prabhat K. Dwivedi, "Microfluidic Biochip Platform Sensitized by AgNpfor SERS Based Rapid Detection of Uric Acid" in Journal of Micromechanics and Microengineering, 32 (2022) 095007 doi: 10.1088/1361-6439/ac848c.**	**2.282**
3	**Shubham Mishra, Tania k. Naqvi, Prabhat K. Dwivedi, Current Challenges and Perspective of Flexible and Wearable Sensors (book chapter, 2023) CRC press, ISBN10: 1032288175, ISBN 13: 978-1032288178,**	**-**
4	**S. Mishra and A. Verma "Variable Density Wrinkling in Thin-Film by Gradient Stress Induced in the Elastomeric Substrate" in Soft Matter. Under Review.**	**4.046**
5	**Shubham Mishra, Ankur verma,"Facile Method of Polymer Micro Lens Fabrication for On-the-Go Photomicrography" Communicated to PLOSone.**	**3.752**

B. APPENDIX:

PUBLICATION IN NATIONAL/INTERNATIONAL CONFERENCES.

Table 6. 2 Publication in national/international conferences.

S. N.	Publication
1	S. Mishra, A. Verma, "Microlens Fabrication and Its Tuning Using Microwave Irradiation" published in conference Proceeding IWNEBD 2019, Mandi, India.