

LED-BASED MICRO COLORIMETER FOR DETERMINATION OF PHENOLIC COMPOUNDS

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Autonomous and miniaturized analytical instruments are very important in today's science. Though, this approach has several obstacles, therefore the design of such instrumentation and applications are difficult. In this work we propose an improved micro colorimetry system that provides comparable results to the existing on the market instrumentation, except the fact that proposed system can measure micro-liter volume samples. By shaping initial micro colorimeter design, several novelties have been introduced that autonomize the operation of the device: upgraded LED's holder with a current controller for wide range measurements and system upgraded, so that absorbance values are provided.

The determination of total phenolic compounds was performed using Folin - Ciocalteu method. Rutin standard solution in the range of 0.01 and 1 mg/ml were used for the calibration and for comparing measurement results with Milton Roy Spectronic 1001 (USA) spectrophotometer. The obtained data proves that linear dependency between concentration of measured samples and absorbance can be obtained using different modes of operation.

The device was optimized for the determination of TPC in a 15 μ l droplet and the LED light intensity was adjusted for optimal operation. In the further investigation, this technology will be integrated into the digital-droplet microfluidics platform. During this presentation, obtained results and the obstacles associated with design of the instrument will be discussed.

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