Abstract

iMedPub Journals
http://www.imedpub.com

Journal of Nephrology and Transplantation

2022
Vol 6. No.3

Development of electro-microfluidic viscometer for bio-chemical applications

Puneeth S B
Presidency University, India

Abstract

A completely automated and integrated Microviscometer is developed on two different platforms, one was on 3D printed microfluidic devices and the other on chromatograph paper-based devices, and its potential to measure relative viscosity is demonstrated. Viscosity is calculated in microfluidic devices fabricated on both the platforms by measuring the time taken by the test fluid to cover the pre-determined length. To measure relative viscosity, reference fluid is necessary, and in both the platforms, water was used asreference fluid. The timing values of normal tap water are used to calibrate the microcontroller associated with the device in order to automate the device. The 3D printed Electro-Microfluidic Viscometer (EMV) mimics the conventional Ostwald viscometer. The EMV measures the reference fluid viscosity, under laminar flow, by automatically evaluating the travel time of the sample fluid vis-à-vis to that of a reference fluid. The EMV,consisting of a microchannel and four equidistance electrodes, was fabricated using a simple desktop fused deposition modeling 3D printer in a single step. The complete platform, comprised of the microfluidic device, onboard display unit, pumping subsystem, data acquisition subsystem, button systems- and signal processing subsystems, has been integrated and automated to determine the viscosity. Here, the device was exhibited to measure the viscosity of fluids such as Raw Milk, Skimmed Milk and Acetic Acid. Similar device was developed for single time usage by employinhg chromatograph papers.

Received: April 10, 2022; **Accepted:** April 17, 2022; **Published:** April 29, 2022

Biography

Puneeth S B has completed his PhD from BITS Pilani, Master's and Bacherlor's are from Visvesvaraya Technological University. He is currently working as Assistant Professor in Department of ECE, Presidency University, Bengaluru. He has published more than 10 papers in reputed journals and has been serving as a peer- reviewed for reputed journals.