

## REFERENCES

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- Abe, Koji, Koji Suzuki, and Daniel Citterio. 2008. "Inkjet-Printed Microfluidic Multianalyte Chemical Sensing Paper." *Analytical Chemistry* 80(18):6928–34. doi: 10.1021/ac800604v.
- Agarwal, Rahul, Arnab Sarkar, Arka Bhowmik, Devdeep Mukherjee, and Suman Chakraborty. 2020. "A Portable Spinning Disc for Complete Blood Count (CBC)." *Biosensors and Bioelectronics* 150. doi: 10.1016/j.bios.2019.111935.
- Aitchison, R., and N. Russell. 1988. "Smoking-a Major Cause of Polycythaemia." *Journal of the Royal Society of Medicine* 81(2):89–91. doi: 10.1177/014107688808100212.
- Alula, Melisew Tadele, Leshern Karamchand, Nicolette R. Hendricks, and Jonathan M. Blackburn. 2018. "Citrate-Capped Silver Nanoparticles as a Probe for Sensitive and Selective Colorimetric and Spectrophotometric Sensing of Creatinine in Human Urine." *Analytica Chimica Acta* 1007:40–49. doi: 10.1016/j.aca.2017.12.016.
- Asare, Kwame. 2008. "Anemia of Critical Illness." *Pharmacotherapy* 28(10):1267–82. doi: 10.1592/phco.28.10.1267.
- Aspuru, Kattalin, Carlos Villa, Fernando Bermejo, Pilar Herrero, and Santiago López. 2011. "Optimal Management of Iron Deficiency Anemia Due to Poor Dietary Intake." *International Journal of General Medicine* 4:741–50.
- Ataullakhanov, F. I., A. V. Pohilko, E. I. Sinauridze, and R. I. Volkova. 1994. "Calcium Threshold in Human Plasma Clotting Kinetics." *Thrombosis Research* 75(4):383–94. doi: 10.1016/0049-3848(94)90253-4.
- Bachiashvili, Kimo, Liton Francisco, Yanjun Chen, Alysia Bosworth, Stephen J. Forman, Ravi Bhatia, and Smita Bhatia. 2022. "Peripheral Blood Parameter Abnormalities Precede Therapy-Related Myeloid Neoplasms after Autologous Transplantation for Lymphoma." *Cancer* 128(7):1392–1401. doi: 10.1002/cncr.34072.
- Banik, Soumyabrata, & Sindhoora, Kaniyala Melanthota, & Arbaaz, Joel Markus Vaz, Vishak Madhwaraj Kadambalithaya, Iftak Hussain, Sibasish Dutta, and Nirmal Mazumder. 2021. "Recent Trends in Smartphone-Based Detection for Biomedical Applications: A Review." *Analytical and Bioanalytical Chemistry* 2389–2406.
- Barati, Ali, Mojtaba Shamsipur, and Hamid Abdollahi. 2015. "Hemoglobin Detection Using Carbon Dots as a Fluorescence Probe." *Biosensors and Bioelectronics* 71:470–75. doi: 10.1016/j.bios.2015.04.073.
- Berry, Samuel B., Syrena C. Fernandes, Anjali Rajaratnam, Nicholas S. Dechiara, and Charles R. Mace. 2016. "Measurement of the Hematocrit Using Paper-Based Microfluidic Devices." *Lab on a Chip* 16(19):3689–94. doi: 10.1039/c6lc00895j.
- Berthier, Jean, Kenneth A. Brakke, and Erwin Berthier. 2016. "Paper-Based Microfluidics." *Open Microfluidics* 229–56. doi: 10.1002/9781118720936.ch7.
- Bhatt, Geeta, Sanjay Kumar, Poonam Sundriyal, Pulak Bhushan, Aviru Basu, Jitendra Singh, and Shantanu Bhattacharya. 2016. "Microfluidics Overview." *Microfluidics for Biologists: Fundamentals and Applications* 33–83. doi: 10.1007/978-3-319-40036-5\_2.
- Billett, Henny H. 1990. *Hemoglobin and Hematocrit*. Vol. 28.
- Biswas, Sujay K., Subhamoy Chatterjee, Soumya Bandyopadhyay, Shantimoy Kar, Nirmal K. Som, Satadal Saha, and Suman Chakraborty. 2021. "Smartphone-Enabled Paper-Based Hemoglobin Sensor for Extreme Point-of-Care Diagnostics." *ACS Sensors* 6(3):1077–85. doi: 10.1021/acssensors.0c02361.
- Blass, K., R. Thibert, and L. Lam. 1974. "A Study of Mechanism of the Jaffe Reaction."

- Blel, Asma, Yann Orven, Nicolas Pallet, Jean François Chasse, Benoit Védie, Marie Anne Lorient, Jean Louis Paul, and Céline Narjoz. 2017. "Pegylated Liposomal Doxorubicin (Caelyx®) Interference with the Spectrophotometric Jaffe Method for Quantitative Determination of Creatinine in Human Plasma." *Clinical Biochemistry* 50(7–8):455–57. doi: 10.1016/j.clinbiochem.2016.12.002.
- Bond, Meaghan, Carlos Elguea, Jasper S. Yan, Michal Pawlowski, Jessica Williams, Amer Wahed, Maria Oden, S. Tkaczyk, and Rebecca Richards-kortum. 2013. "Chromatography Paper as a Low-Cost Medium for Accurate Spectrophotometric Assessment of Blood Hemoglobin Concentration." *Lab on a Chip* 13:2381–88. doi: 10.1039/c3lc40908b.
- Brown, Jocelyn, Lauren Theis, Lila Kerr, Nazima Zakhidova, Kelly O'Connor, Margaret Uthman, Z. Maria Oden, and Rebecca Richards-Kortum. 2011. "A Hand-Powered, Portable, Low-Cost Centrifuge for Diagnosing Anemia in Low-Resource Settings." *American Journal of Tropical Medicine and Hygiene* 85(2):327–32. doi: 10.4269/ajtmh.2011.10-0399.
- Burbea, Z. Barnea. 2019. "Near Infra-Red, Non-Invasive Serum Creatinine Determination and Monitoring." *Journal of Nephrology & Renal Diseases* 3:19. doi: 10.4172/2576-3962-C1-010.
- Cao, Rong, Zhirong Pan, Hua Tang, Jing Wu, Junfei Tian, Azadeh Nilghaz, and Miaosi Li. 2020. "Understanding the Coffee-Ring Effect of Red Blood Cells for Engineering Paper-Based Blood Analysis Devices." *Chemical Engineering Journal* 391. doi: 10.1016/j.cej.2019.123522.
- Carneiro, Ilona A., Chris J. Drakeley, Seth Owusu-Agyei, Bruno Mmbando, and Daniel Chandramohan. 2007. "Haemoglobin and Haematocrit: Is the Threefold Conversion Valid for Assessing Anaemia in Malaria-Endemic Settings?" *Malaria Journal* 6. doi: 10.1186/1475-2875-6-67.
- Carneiro, J., E. Doutel, J. B. L. M. Campos, and J. M. Miranda. 2016. "PDMS Droplet Formation and Characterization by Hydrodynamic Flow Focusing Technique in a PDMS Square Microchannel." *Journal of Micromechanics and Microengineering* 26(10). doi: 10.1088/0960-1317/26/10/105013.
- Carrilho, Emanuel, Andres W. Martinez, and George M. Whitesides. 2009. "Understanding Wax Printing: A Simple Micropatterning Process for Paper-Based Microfluidics." *Analytical Chemistry* 81(16):7091–95. doi: 10.1021/ac901071p.
- Carrilho, Emanuel, Scott T. Phillips, Sarah J. Vella, Andres W. Martinez, and George M. Whitesides. 2009. "Paper Microzone Plates." *Analytical Chemistry* 81(15):5990–98. doi: 10.1021/ac900847g.
- Cate, David M., Jaclyn A. Adkins, Jaruwat Mettakoonpitak, and Charles S. Henry. 2015. "Recent Developments in Paper-Based Microfluidic Devices." *Analytical Chemistry* 87(1):19–41. doi: 10.1021/ac503968p.
- Chaiyo, Sudkate, Kurt Kalcher, Amara Apilux, Orawon Chailapakul, and Weena Siangproh. 2018a. "A Novel Paper-Based Colorimetry Device for the Determination of the Albumin to Creatinine Ratio." *The Analyst* 143(22):5453–60. doi: 10.1039/C8AN01122B.
- Chaiyo, Sudkate, Kurt Kalcher, Amara Apilux, Orawon Chailapakul, and Weena Siangproh. 2018b. "A Novel Paper-Based Colorimetry Device for the Determination of the Albumin to Creatinine Ratio." *Analyst* 143(22):5453–60. doi: 10.1039/c8an01122b.
- Chakraborty, Suman. 2005. "Dynamics of Capillary Flow of Blood into a Microfluidic Channel." *Lab on a Chip* 5(4):421–30. doi: 10.1039/b414566f.
- Chattopadhyay, Sudip, Rishi Ram, Arnab Sarkar, and Suman Chakraborty. 2022.

- “Smartphone-Based Automated Estimation of Plasma Creatinine from Finger-Pricked Blood on a Paper Strip via Single-User Step Sample-to-Result Integration.” *Measurement: Journal of the International Measurement Confederation* 199. doi: 10.1016/j.measurement.2022.111492.
- Chattopadhyay, Sudip, Rishi Ram, Arnab Sarkar, Gorachand Dutta, and Suman Chakraborty. 2021a. “Reagent-Free Hemoglobin Estimation on a Spinning Disc.” *Microchemical Journal* 168(May):106463. doi: 10.1016/j.microc.2021.106463.
- Chattopadhyay, Sudip, Rishi Ram, Arnab Sarkar, Gorachand Dutta, and Suman Chakraborty. 2021b. “Reagent-Free Hemoglobin Estimation on a Spinning Disc.” *Microchemical Journal* 168. doi: 10.1016/j.microc.2021.106463.
- Chen, Shufan, Yu Song, Fanping Shi, Yunling Liu, and Qiang Ma. 2016. “Sensitive Detection of Picric Acid Based on Creatinine-Capped Solid Film Assembled by Nitrogen-Doped Graphene Quantum Dots and Chitosan.” *Sensors and Actuators B: Chemical* 231:634–40. doi: 10.1016/j.snb.2016.03.071.
- Chen, Zhengkun, Sina Kheiri, Edmond W. K. Young, and Eugenia Kumacheva. 2022. “Trends in Droplet Microfluidics: From Droplet Generation to Biomedical Applications.” *Langmuir*. doi: 10.1021/acs.langmuir.2c00491.
- Chin, Curtis D., Vincent Linder, and Samuel K. Sia. 2007. “Lab-on-a-Chip Devices for Global Health: Past Studies and Future Opportunities.” *Lab Chip* 7(1):41–57. doi: 10.1039/B611455E.
- Choudhary, Tripurari, G. P. Rajamanickam, and Dhananjaya Dendukuri. 2015. “Woven Electrochemical Fabric-Based Test Sensors (WEFTS): A New Class of Multiplexed Electrochemical Sensors.” *Lab on a Chip* 15(9):2064–72. doi: 10.1039/C5LC00041F.
- Czugala, Monika, Robert Gorkin, Thomas Phelan, Jennifer Gaughran, Vincenzo Fabio Curto, Jens Ducreé, Dermot Diamond, and Fernando Benito-Lopez. 2012. “Optical Sensing System Based on Wireless Paired Emitter Detector Diode Device and Ionogels for Lab-on-a-Disc Water Quality Analysis.” *Lab on a Chip* 12(23):5069–78. doi: 10.1039/c2lc40781g.
- Dal Dosso, Francesco, Deborah Decrop, Elena Pérez-Ruiz, Devin Daems, Hannah Agten, Osamah Al-Ghezi, Olivier Bollen, Jolien Breukers, Florian De Rop, Maria Katsafadou, Jens Lepoudre, Linye Lyu, Pieter Piron, Robbe Saesen, Shoera Sels, Rani Soenen, Ellen Staljanssens, Jehan Taraporewalla, Tadej Kokalj, Dragana Spasic, and Jeroen Lammertyn. 2018. “Creasensor: SIMPLE Technology for Creatinine Detection in Plasma.” *Analytica Chimica Acta* 1000:191–98. doi: 10.1016/j.aca.2017.11.026.
- Debus, Bruno, Dmitry Kirsanov, Irina Yaroshenko, Alla Sidorova, Alena Piven, and Andrey Legin. 2015. “Two Low-Cost Digital Camera-Based Platforms for Quantitative Creatinine Analysis in Urine.” *Analytica Chimica Acta* 895:71–79. doi: 10.1016/j.aca.2015.09.007.
- Dey, Ranabir, Shantimoy Kar, Sumit Joshi, Tapas K. Maiti, and Suman Chakraborty. 2015. “Ultra-Low-Cost ‘Paper-and-Pencil’ Device for Electrically Controlled Micromixing of Analytes.” *Microfluidics and Nanofluidics* 19(2):375–83. doi: 10.1007/s10404-015-1567-3.
- Diouf, A., S. Motia, N. El Alami El Hassani, N. El Bari, and B. Bouchikhi. 2017. “Development and Characterization of an Electrochemical Biosensor for Creatinine Detection in Human Urine Based on Functional Molecularly Imprinted Polymer.” *Journal of Electroanalytical Chemistry* 788:44–53. doi: 10.1016/j.jelechem.2017.01.068.
- Drancourt, Michel, Audrey Michel-Lepage, Sylvie Boyer, and Didier Raoult. 2016. “The Point-of-Care Laboratory in Clinical Microbiology.” *Clinical Microbiology Reviews* 29(3):429–47. doi: 10.1128/CMR.00090-15.

- Ducrée, Jens, Stefan Haerberle, Sascha Lutz, Sarah Pausch, Felix Von Stetten, and Roland Zengerle. 2007. "The Centrifugal Microfluidic Bio-Disk Platform." *Journal of Micromechanics and Microengineering* 17(7). doi: 10.1088/0960-1317/17/7/S07.
- Duford, David A., Yongqing Xi, and Eric D. Salin. 2013. "Enzyme Inhibition-Based Determination of Pesticide Residues in Vegetable and Soil in Centrifugal Microfluidic Devices." *Analytical Chemistry* 85(16):7834–41. doi: 10.1021/ac401416w.
- Ellairaja, S., K. Shenbagavalli, and V. S. Vasantha. 2017. "Ultrasensitive Fluorescent Biosensor for Creatinine Determination in Human Biofluids Based on Water Soluble Rhodamine B Dye-Au<sup>3+</sup> Ions Conjugate." *ChemistrySelect* 2(3):1025–31. doi: 10.1002/slct.201601110.
- Erenas, Miguel M., Inmaculada Ortiz-Gómez, Ignacio De Orbe-Payá, Daniel Hernández-Alonso, Pablo Ballester, Pascal Blondeau, Francisco J. Andrade, Alfonso Salinas-Castillo, and Luis Fermín Capitán-Vallvey. 2019. "Ionophore-Based Optical Sensor for Urine Creatinine Determination." *ACS Sensors* 4(2):421–26. doi: 10.1021/acssensors.8b01378.
- Fernandes, Ana C., Krist V. Gernaey, and Ulrich Krühne. 2018. "Connecting Worlds – a View on Microfluidics for a Wider Application." *Biotechnology Advances* 36(4):1341–66. doi: 10.1016/j.biotechadv.2018.05.001.
- Ferrari, BarbaraKarnes JH, Rollin J, Giles JB, Martinez KL, Shaffer CM, Momozawa Y, Steiner HE, Bombin A, Shi M, Mosley JD, Inai C, Selleng K, Thiele T, Mushiroda T, Stanaway I, Heddle NM, Kubo M, Phillips EJ, Pouplard C, Gruel Y, Greinacher A, Roden DM Warkentin TE, and Flora Peyvandi. 2022. "ABO O Blood Group as a Risk Factor for Platelet Reactivity in Heparin-Induced Thrombocytopenia." *Blood* 140(3):274(3):274–84.
- Fleisher, M., M. Gladstone, D. Crystal, and M. K. Schwartz. 1989. "Two Whole-Blood Multi-Analyte Analyzers Evaluated." *Clinical Chemistry* 35(7):1532–35. doi: 10.1093/clinchem/35.7.1532.
- Foudeh, Amir M., Tohid Fatanat Didar, Teodor Veres, and Maryam Tabrizian. 2012. "Microfluidic Designs and Techniques Using Lab-on-a-Chip Devices for Pathogen Detection for Point-of-Care Diagnostics." *Lab on a Chip* 12(18):3249. doi: 10.1039/c2lc40630f.
- Fu, Lung-Ming, Chin-Chung Tseng, Wei-Jhong Ju, and Ruey-Jen Yang. 2018. "Rapid Paper-Based System for Human Serum Creatinine Detection." *Inventions* 3(2):34. doi: 10.3390/inventions3020034.
- Gbinigie, Oghenekome, Christopher P. Price, Carl Heneghan, Ann Van den Bruel, and Annette Plüddemann. 2015. "Creatinine Point-of-Care Testing for Detection and Monitoring of Chronic Kidney Disease: Primary Care Diagnostic Technology Update." *British Journal of General Practice* 65(640):608–608. doi: 10.3399/bjgp15X687613.
- Gilmore, Jordon, Monsur Islam, and Rodrigo Martinez-Duarte. 2016. "Challenges in the Use of Compact Disc-Based Centrifugal Microfluidics for Healthcare Diagnostics at the Extreme Point of Care." *Micromachines* 7(4). doi: 10.3390/mi7040052.
- Godino, Neus, Robert Gorkin, Ana V. Linares, Robert Burger, and Jens Ducrée. 2013. "Comprehensive Integration of Homogeneous Bioassays via Centrifugo-Pneumatic Cascading." *Lab on a Chip* 13(4):685–94. doi: 10.1039/c2lc40722a.
- Golden, J. P., J. Verbarq, P. B. Howell, L. C. Shriver-Lake, and F. S. Ligler. 2013. "Automated Processing Integrated with a Microflow Cytometer for Pathogen Detection in Clinical Matrices." *Biosensors and Bioelectronics* 40(1):10–16. doi: 10.1016/j.bios.2012.08.015.
- Goldenfarb, P. B., F. P. Bowyer, E. Hall, and E. Brosious. 1971. "Reproducibility in the

- Hematology Laboratory: The Microhematocrit Determination.” *American Journal of Clinical Pathology* 56(1):35–39. doi: 10.1093/ajcp/56.1.35.
- Goodhead, Lauren K., and Frances M. MacMillan. 2017. “Measuring Osmosis and Hemolysis of Red Blood Cells.” *Advances in Physiology Education* 41(2):298–305. doi: 10.1152/advan.00083.2016.
- Grochocki, Wojciech, Michał J. Markuszewski, and Joselito P. Quirino. 2017. “Simultaneous Determination of Creatinine and Acetate by Capillary Electrophoresis with Contactless Conductivity Detector as a Feasible Approach for Urinary Tract Infection Diagnosis.” *Journal of Pharmaceutical and Biomedical Analysis* 137:178–81. doi: 10.1016/j.jpba.2017.01.032.
- Guinovart, Tomàs, Daniel Hernández-Alonso, Louis Adriaenssens, Pascal Blondeau, F. Xavier Rius, Pablo Ballester, and Francisco J. Andrade. 2017. “Characterization of a New Ionophore-Based Ion-Selective Electrode for the Potentiometric Determination of Creatinine in Urine.” *Biosensors and Bioelectronics* 87:587–92. doi: 10.1016/j.bios.2016.08.025.
- Guo, Tiffany, Ritish Patnaik, Kevin Kuhlmann, Alex J. Rai, and Samuel K. Sia. 2015. “Smartphone Dongle for Simultaneous Measurement of Hemoglobin Concentration and Detection of HIV Antibodies.” *Lab on a Chip* 15(17):3514–20. doi: 10.1039/c5lc00609k.
- Hall, Jean A., Maha Yerramilli, Edward Obare, Jun Li, Murthy Yerramilli, and Dennis E. Jewell. 2017. “Serum Concentrations of Symmetric Dimethylarginine and Creatinine in Cats with Kidney Stones” edited by A. I. Aguilera. *PLOS ONE* 12(4):e0174854. doi: 10.1371/journal.pone.0174854.
- Hanif, Saima, Peter John, Wenyue Gao, Muhammad Saqib, Liming Qi, and Guobao Xu. 2016. “Chemiluminescence of Creatinine/H<sub>2</sub>O<sub>2</sub>/Co<sup>2+</sup> and Its Application for Selective Creatinine Detection.” *Biosensors and Bioelectronics* 75:347–51. doi: 10.1016/j.bios.2015.08.053.
- Heist, Christopher A., Gayan C. Bandara, David J. Bemis, Joel C. Pommerenck, and Vincent T. Remcho. 2018. “New Paper-Based Microfluidic Tools for the Analysis of Blood Serum Protein and Creatinine Built via Aerosolized Deposition of Polycaprolactone.” *Analytical Methods* 10(25):2994–3000. doi: 10.1039/C8AY00981C.
- Ho, Thy L. T., Nhung T. T. Hoang, Jungeun Lee, Jun Hui Park, and Byung Kwon Kim. 2018. “Determining Mean Corpuscular Volume and Red Blood Cell Count Using Electrochemical Collision Events.” *Biosensors and Bioelectronics* 110:155–59. doi: 10.1016/j.bios.2018.03.053.
- Hollis, Veronica S., Judith A. Holloway, Scott Harris, Daniel Spencer, Cees van Berkel, and Hywel Morgan. 2012. “Comparison of Venous and Capillary Differential Leukocyte Counts Using a Standard Hematology Analyzer and a Novel Microfluidic Impedance Cytometer.” *PLoS ONE* 7(9). doi: 10.1371/journal.pone.0043702.
- Honda, Nobuo, Ulrika Lindberg, Per Andersson, Stephan Hoffmann, and Hiroyuki Takei. 2005. “Simultaneous Multiple Immunoassays in a Compact Disc-Shaped Microfluidic Device Based on Centrifugal Force.” *Clinical Chemistry* 51(10):1955–61. doi: 10.1373/clinchem.2005.053348.
- Hooshmand, Sara, and Zarrin Es’haghi. 2017. “Microfabricated Disposable Nanosensor Based on CdSe Quantum Dot/Ionic Liquid-Mediated Hollow Fiber-Pencil Graphite Electrode for Simultaneous Electrochemical Quantification of Uric Acid and Creatinine in Human Samples.” *Analytica Chimica Acta* 972:28–37. doi: 10.1016/j.aca.2017.04.035.
- Horstman, D., R. Weiskopf, and R. E. Jackson. 1980. “Work Capacity during 3-Wk

- Sojourn at 4,300 m: Effects of Relative Polycythemia.” *Journal of Applied Physiology Respiratory Environmental and Exercise Physiology* 49(2):311–18. doi: 10.1152/jappl.1980.49.2.311.
- Hou, Han Wei, Ali Asgar S. Bhagat, Wong Cheng Lee, Sha Huang, Jongyoon Han, and Chwee Teck Lim. 2011. “Microfluidic Devices for Blood Fractionation.” *Micromachines* 2(3):319–43. doi: 10.3390/mi2030319.
- Hu, Qi, Dan Ding, and Youhong Tang. 2022. “Inorganic–Organic Hybrid Materials to Detect Urinary Biomarkers: Recent Progress and Future Prospects.” *Materials Chemistry Frontiers* 6(15):2011–33. doi: 10.1039/d2qm00213b.
- Huang, Chao-June, Jiun-Lin Lin, Ping-Hong Chen, Mei-Jywan Syu, and Gwo-Bin Lee. 2011. “A Multi-Functional Electrochemical Sensing System Using Microfluidic Technology for the Detection of Urea and Creatinine.” *ELECTROPHORESIS* 32(8):931–38. doi: 10.1002/elps.201000679.
- Huang, Jia Yu, Hong Ting Lin, Tzu Heng Chen, Chung An Chen, Huan Tsung Chang, and Chien Fu Chen. 2018. “Signal Amplified Gold Nanoparticles for Cancer Diagnosis on Paper-Based Analytical Devices.” *ACS Sensors* 3(1):174–82. doi: 10.1021/acssensors.7b00823.
- Hwang, Hyundoo, Yubin Kim, Juhye Cho, Ji Yoon Lee, Man Sik Choi, and Yoon Kyoung Cho. 2013. “Lab-on-a-Disc for Simultaneous Determination of Nutrients in Water.” *Analytical Chemistry* 85(5):2954–60. doi: 10.1021/ac3036734.
- Hwu, Edwin En Te, and Anja Boisen. 2018. “Hacking CD/DVD/Blu-Ray for Biosensing.” *ACS Sensors* 3(7):1222–32. doi: 10.1021/acssensors.8b00340.
- Jalal, Uddin M., Gyeong Jun Jin, and Joon S. Shim. 2017. “Paper–Plastic Hybrid Microfluidic Device for Smartphone-Based Colorimetric Analysis of Urine.” *Analytical Chemistry* 89(24):13160–66. doi: 10.1021/acs.analchem.7b02612.
- Jia, Haiyang, Michael Heymann, Frank Bernhard, Petra Schwille, and Lei Kai. 2017. “Cell-Free Protein Synthesis in Micro Compartments: Building a Minimal Cell from Biobricks.” *New Biotechnology* 39:199–205. doi: 10.1016/j.nbt.2017.06.014.
- Johansson, Bertil, and Christine J. Harrison. 2010. “Acute Myeloid Leukemia.” *Cancer Cytogenetics* 45–139. doi: 10.1002/9781118010136.ch5.
- Kar, Shantimoy, Monika Dash, Tapas Kumar Maiti, and Suman Chakraborty. 2015. “Effect of Hematocrit on Blood Dynamics on a Compact Disc Platform.” *Analyst* 140(5):1432–37. doi: 10.1039/c4an02020k.
- Kar, Shantimoy, Uddipta Ghosh, Tapas Kumar Maiti, and Suman Chakraborty. 2015. “Haemoglobin Content Modulated Deformation Dynamics of Red Blood Cells on a Compact Disc.” *Lab on a Chip* 15(24):4571–77. doi: 10.1039/c5lc00968e.
- Kar, Shantimoy, Tapas Kumar Maiti, and Suman Chakraborty. 2016. “Microfluidics-Based Low-Cost Medical Diagnostic Devices: Some Recent Developments.” *INAE Letters* 1(2):59–64. doi: 10.1007/s41403-016-0009-1.
- Kashima, S., K. Inoue, M. Matsumoto, and K. Akimoto. 2017. “Low Serum Creatinine Is a Type 2 Diabetes Risk Factor in Men and Women: The Yuport Health Checkup Center Cohort Study.” *Diabetes and Metabolism* 43(5):460–64. doi: 10.1016/j.diabet.2017.04.005.
- Kemal, Yetisen Ali, Akram Muhammad Safwan, and Lowe Christopher R. 2013. “Paper-Based Microfluidic Point-of-Care Diagnostic Devices.” *Lab on a Chip* 13(12):2210–51.
- Kent, Rebecca, Venu P. Gopalakrishnan, Madhav C. Menon, and Michael J. Ross. 2017. “The Case | Labile Creatinine Levels in a Patient with Breast Cancer.” *Kidney International* 91(3):761–62. doi: 10.1016/j.kint.2016.08.004.
- Khiabani, Parisa S., Alexander H. Soeriyadi, Peter J. Reece, and J. Justin Gooding. 2016.

- “Paper-Based Sensor for Monitoring Sun Exposure.” *ACS Sensors* 1(6):775–80. doi: 10.1021/acssensors.6b00244.
- Kim, Dami, SeJin Kim, and Sanghyo Kim. 2020. “An Innovative Blood Plasma Separation Method for a Paper-Based Analytical Device Using Chitosan Functionalization.” *The Analyst* 145(16):5491–99. doi: 10.1039/D0AN00500B.
- Kim, Moon Jung, Quehn Park, Myung Hee Kim, Jeong Won Shin, and Hyun Ok Kim. 2013. “Comparison of the Accuracy of Noninvasive Hemoglobin Sensor (NBM-200) and Portable Hemoglobinometer (Hemocue) with an Automated Hematology Analyzer (LH500) in Blood Donor Screening.” *Annals of Laboratory Medicine* 33(4):261–67. doi: 10.3343/alm.2013.33.4.261.
- Kiran Raj, M., Soumya Bhattacharya, Sunando Dasgupta, and Suman Chakraborty. 2018. “Collective Dynamics of Red Blood Cells on an: In Vitro Microfluidic Platform.” *Lab on a Chip* 18(24):3939–48. doi: 10.1039/c8lc01198b.
- Ko, Sungho, Bumjun Kim, Seong-Sik Jo, Se Young Oh, and Je-Kyun Park. 2007. “Electrochemical Detection of Cardiac Troponin I Using a Microchip with the Surface-Functionalized Poly(Dimethylsiloxane) Channel.” *Biosensors and Bioelectronics* 23(1):51–59. doi: 10.1016/j.bios.2007.03.013.
- Koç, Çağla, and Füsün Şahin. 2022. “What Are the Most Effective Factors in Determining Future Exacerbations, Morbidity Weight, and Mortality in Patients with COPD Attack?” *Medicina (Lithuania)* 58(2). doi: 10.3390/medicina58020163.
- Kong, Ling X., Alexandra Perebikovskiy, Jacob Moebius, Lawrence Kulinsky, and Marc Madou. 2016. “Lab-on-a-CD: A Fully Integrated Molecular Diagnostic System.” *SLAS Technology* 21(3):323–55. doi: 10.1177/2211068215588456.
- Kosiborod, Mikhail, Grace L. Smith, Martha J. Radford, Jo Anne M. Foody, and Harlan M. Krumholz. 2003. “The Prognostic Importance of Anemia in Patients with Heart Failure.” *American Journal of Medicine* 114(2):112–19. doi: 10.1016/S0002-9343(02)01498-5.
- Kozel, Thomas R., and Amanda R. Burnham-Marusich. 2017. “Point-of-Care Testing for Infectious Diseases: Past, Present, and Future.” *Journal of Clinical Microbiology* 55(8):2313–20. doi: 10.1128/JCM.00476-17.
- Krishnegowda, Avinash, Nagaraja Padmarajaiah, Shivakumar Anantharaman, and Krishna Honnur. 2017. “Spectrophotometric Assay of Creatinine in Human Serum Sample.” *Arabian Journal of Chemistry* 10:S2018–24. doi: 10.1016/j.arabjc.2013.07.030.
- Kulkarni, Madhusudan B., and Sanket Goel. 2022. “Recent Advancements in Integrated Microthermofluidic Systems for Biochemical and Biomedical Applications – A Review.” *Sensors and Actuators A: Physical* 341. doi: 10.1016/j.sna.2022.113590.
- Kumar, Ashok A., Matthew R. Patton, Jonathan W. Hennek, Si Yi Ryan Lee, Gaetana D’alesio-Spina, Xiaoxi Yang, Julie Kanter, Sergey S. Shevkoplyas, Carlo Brugnara, and George M. Whitesides. 2014. “Density-Based Separation in Multiphase Systems Provides a Simple Method to Identify Sickle Cell Disease.” *Proceedings of the National Academy of Sciences of the United States of America* 111(41):14864–69. doi: 10.1073/pnas.1414739111.
- Kumar, Parveen, Ranjana Jaiwal, and C. S. Pundir. 2017. “An Improved Amperometric Creatinine Biosensor Based on Nanoparticles of Creatininase, Creatinase and Sarcosine Oxidase.” *Analytical Biochemistry* 537:41–49. doi: 10.1016/j.ab.2017.08.022.
- Kumar, Sumit, Rishi Ram, Arnab Sarkar, Sunando Dasgupta, and Suman Chakraborty. 2020. “Rapid Determination of Erythrocyte Sedimentation Rate (ESR) by an Electrically Driven Blood Droplet Biosensor.” *Biomicrofluidics* 14(6). doi: 10.1063/5.0026332.

- Lai, Siyi, Shengnian Wang, Jun Luo, L. James Lee, Shang-Tian Yang, and Marc J. Madou. 2004. "Design of a Compact Disk-like Microfluidic Platform for Enzyme-Linked Immunosorbent Assay." *Analytical Chemistry* 76(7):1832–37. doi: 10.1021/ac0348322.
- Langley, Wilson D., and Margaret Evans. 1936. "THE DETERMINATION OF CREATININE WITH SODIUM 3,5-DINITROBENZOATE." *Journal of Biological Chemistry* 115(1):333–41. doi: 10.1016/S0021-9258(18)74784-4.
- Langsi, Victor K., Benjamin A. Ashu-Arrah, Niamh Ward, and Jeremy D. Glennon. 2017. "Synthesis and Characterisation of Non-Bonded 1.7 Mm Thin-Shell (TS1.7-100 Nm) Silica Particles for the Rapid Separation and Analysis of Uric Acid and Creatinine in Human Urine by Hydrophilic Interaction Chromatography." *Journal of Chromatography A* 1506:37–44. doi: 10.1016/j.chroma.2017.05.004.
- Lee, Beom Seok, Jung Nam Lee, Jong Myeon Park, Jeong Gun Lee, Suhyeon Kim, Yoon Kyoung Cho, and Christopher Ko. 2009. "A Fully Automated Immunoassay from Whole Blood on a Disc." *Lab on a Chip* 9(11):1548–55. doi: 10.1039/b820321k.
- Lee, Junho, Jaewoo Song, Jun Ho Choi, Soocheol Kim, Uihan Kim, Van Thuan Nguyen, Jong Seok Lee, and Chulmin Joo. 2020. "A Portable Smartphone-Linked Device for Direct, Rapid and Chemical-Free Hemoglobin Assay." *Scientific Reports* 10(1). doi: 10.1038/s41598-020-65607-8.
- Lewińska, Izabela, Mikołaj Speichert, Mateusz Granica, and Łukasz Tymecki. 2021. "Colorimetric Point-of-Care Paper-Based Sensors for Urinary Creatinine with Smartphone Readout." *Sensors and Actuators B: Chemical* 340:129915. doi: 10.1016/j.snb.2021.129915.
- Li, H., D. Han, G. M. Pauletti, and A. J. Steckl. 2014. "Blood Coagulation Screening Using a Paper-Based Microfluidic Lateral Flow Device." *Lab Chip* 14(20):4035–41. doi: 10.1039/C4LC00716F.
- Li, Zedong, Minli You, Yuemeng Bai, Yan Gong, and Feng Xu. 2020. "Equipment-Free Quantitative Readout in Paper-Based Point-of-Care Testing." *Small Methods* 4(4). doi: 10.1002/smt.201900459.
- Lin, Yen-Heng, Shih-Hao Wang, Min-Hsien Wu, Tung-Ming Pan, Chao-Sung Lai, Ji-Dung Luo, and Chiuan-Chian Chiou. 2013. "Integrating Solid-State Sensor and Microfluidic Devices for Glucose, Urea and Creatinine Detection Based on Enzyme-Carrying Alginate Microbeads." *Biosensors and Bioelectronics* 43:328–35. doi: 10.1016/j.bios.2012.12.053.
- Liu, Juewen, Debapriya Mazumdar, and Yi Lu. 2006. "A Simple and Sensitive 'Dipstick' Test in Serum Based on Lateral Flow Separation of Aptamer-Linked Nanostructures." *Angewandte Chemie International Edition* 45(47):7955–59. doi: 10.1002/anie.200603106.
- Loubiere, S., and J. P. Moatti. 2010. "Economic Evaluation of Point-of-Care Diagnostic Technologies for Infectious Diseases." *Clinical Microbiology and Infection* 16(8):1070–76. doi: 10.1111/j.1469-0691.2010.03280.x.
- Lu, Yao, Weiwei Shi, Jianhua Qin, and Bingcheng Lin. 2010. "Fabrication and Characterization of Paper-Based Microfluidics Prepared in Nitrocellulose Membrane By Wax Printing." *Analytical Chemistry* 82(1):329–35. doi: 10.1021/ac9020193.
- Lutz, Sascha. 2011. "Centrifugal Microfluidic Systems for Protein and Nucleic Acid Analysis."
- ter Maaten, Jozine M., Kevin Damman, Hans L. Hillege, Stephan J. Bakker, Stefan D. Anker, Gerjan Navis, and Adriaan A. Voors. 2014. "Creatinine Excretion Rate, a Marker of Muscle Mass, Is Related to Clinical Outcome in Patients with Chronic Systolic Heart Failure." *Clinical Research in Cardiology* 103(12):976–83. doi:

10.1007/s00392-014-0738-7.

- Macnee, W. 1994. "Pathophysiology of Cor Pulmonale in Chronic Obstructive Pulmonary Disease: Part Two." *American Journal of Respiratory and Critical Care Medicine* 150(4):1158–68. doi: 10.1164/ajrccm.150.4.7921453.
- Maejima, Kento, Yuki Hiruta, and Daniel Citterio. 2020. "Centrifugal Paperfluidic Platform for Accelerated Distance-Based Colorimetric Signal Readout." *Analytical Chemistry* 92(7):4749–54. doi: 10.1021/acs.analchem.9b05782.
- Marc Madou, Jim Zoval, Guangyao Jia, Horacio Kido, Jitae Kim, and Nahui Kim. 2006. "Lab on a CD." *Annual Review of Biomedical Engineering* 8:601–28.
- Marchioli, Roberto, Riccardo Cavazzina, Rosa Maria Marfisi, Arianna Masciulli, Marco Scarano, Guido Finazzi, Tiziano Barbui, Giorgina Specchia, Rossella Cacciola, Daniela Cilloni, Valerio De Stefano, Roberto Latagliata, Antonio Spadea, Elena Elli, Alessandra Iurlo, Francesca Lunghi, Monia Lunghi, Pellegrino Musto, Caterina Musolino, Nicola Cascavilla, Giovanni Quarta, Maria Luigia Randi, Davide Rapezzi, Marco Ruggeri, Elisa Rumi, Anna Rita Scortechini, Simone Santini, Sergio Siragusa, Alessia Tieghi, Emanuele Angelucci, Giuseppe Visani, and Alessandro Maria Vannucchi. 2013. "Cardiovascular Events and Intensity of Treatment in Polycythemia Vera." *New England Journal of Medicine* 368(1):22–33.
- Maria, M. Sneha, P. E. Rakesh, T. S. Chandra, and A. K. Sen. 2017. "Capillary Flow-Driven Microfluidic Device with Wettability Gradient and Sedimentation Effects for Blood Plasma Separation." *Scientific Reports* 7(1):43457. doi: 10.1038/srep43457.
- Mayer, G. A. 1965. "Hematocrit and Coronary Heart Disease." *Canadian Medical Association Journal* 93(22):1151–53.
- McLean, Erin, Mary Cogswell, Ines Egli, Daniel Wojdyla, and Bruno De Benoist. 2009. "Worldwide Prevalence of Anaemia, WHO Vitamin and Mineral Nutrition Information System, 1993-2005." *Public Health Nutrition* 12(4):444–54. doi: 10.1017/S1368980008002401.
- Medina, Lara A., C. Mundy, J. Kandulu, L. Chisuwo, and I. Bates. 2005. "Evaluation and Costs of Different Haemoglobin Methods for Use in District Hospitals in Malawi." *J Clin Pathol* 58:56–60. doi: 10.1136/jcp.2004.018366.
- Metcalf, E. C., M. R. A. Morgan, and P. D. G. Dean. 1982. "Chromatographic Assay of Steroids on Immuno-Affinity Paper Strips; a Rapid Method for the Quantitation of Digoxin and Oestriol-16 $\alpha$ -Glucuronide Concentrations." *Journal of Chromatography A* 235(2):501–6. doi: 10.1016/S0021-9673(00)85914-2.
- Misawa, Kazushi, Tomohiro Yamamoto, Yuki Hiruta, Hiroki Yamazaki, and Daniel Citterio. 2020. "Text-Displaying Semiquantitative Competitive Lateral Flow Immunoassay Relying on Inkjet-Printed Patterns." *ACS Sensors* 5(7):2076–85. doi: 10.1021/acssensors.0c00637.
- Morgner, Frank, Alexandre Lecointre, Loïc J. Charbonnière, and Hans Gerd Löhmannsröben. 2015. "Detecting Free Hemoglobin in Blood Plasma and Serum with Luminescent Terbium Complexes." *Physical Chemistry Chemical Physics* 17(3):1740–45. doi: 10.1039/c4cp04206a.
- Mousavizadegan, Maryam, Amirreza Roshani, and Morteza Hosseini. 2021. "Novel Paper-Based Diagnostic Devices for Early Detection of Cancer." *Biosensor Based Advanced Cancer Diagnostics: From Lab to Clinics* 285–301. doi: 10.1016/B978-0-12-823424-2.00015-6.
- Myers, Gerard J., and Joe Browne. 2007. "Point of Care Hematocrit and Hemoglobin in Cardiac Surgery: A Review." *Perfusion* 22(3):179–83. doi: 10.1177/0267659107080826.
- Nabavizadeh, Poonch, Shadi Ghadermarzi, and Mohammad Fakhri. 2014. "A New Method

- to Make 24-Hour Urine Collection More Convenient: A Validity Study.” *International Journal of Nephrology* 2014. doi: 10.1155/2014/718147.
- Nayak, Samiksha, Nicole R. Blumenfeld, Tassaneewan Laksanasopin, and Samuel K. Sia. 2017. “Point-of-Care Diagnostics: Recent Developments in a Connected Age.” *Analytical Chemistry* 89(1):102–23. doi: 10.1021/acs.analchem.6b04630.
- Newman, Howard, and Diana Hardie. 2021. “HIV-1 Viral Load Testing in Resource-Limited Settings: Challenges and Solutions for Specimen Integrity.” *Reviews in Medical Virology* 31(2). doi: 10.1002/rmv.2165.
- Nieh, Chi-Hua, Seiya Tsujimura, Osamu Shirai, and Kenji Kano. 2013. “Amperometric Biosensor Based on Reductive H<sub>2</sub>O<sub>2</sub> Detection Using Pentacyanoferrate-Bound Polymer for Creatinine Determination.” *Analytica Chimica Acta* 767:128–33. doi: 10.1016/j.aca.2012.12.052.
- Nilghaz, Azadeh, and Wei Shen. 2015. “Low-Cost Blood Plasma Separation Method Using Salt Functionalized Paper.” *RSC Advances* 5(66):53172–79. doi: 10.1039/C5RA01468A.
- Nkrumah, Bernard, Samuel Blay Nguah, Nimako Sarpong, Denise Dekker, Ali Idriss, Juergen May, and Yaw Adu-Sarkodie. 2011. “Hemoglobin Estimation by the HemoCue Portable Hemoglobin Photometer in a Resource Poor Setting.” *BMC Clinical Pathology* 11. doi: 10.1186/1472-6890-11-5.
- Noe, D. A., V. Weedn, and W. R. Bell. 1984. “Direct Spectrophotometry of Serum Hemoglobin: An Allen Correction Compared with a Three-Wavelength Polychromatic Analysis.” *Clinical Chemistry* 30(5):627–30. doi: 10.1093/clinchem/30.5.627.
- Noviana, Eka, Daniel Blascke Carrão, Rimadani Pratiwi, and Charles S. Henry. 2020. “Emerging Applications of Paper-Based Analytical Devices for Drug Analysis: A Review.” *Analytica Chimica Acta* 1116:70–90. doi: 10.1016/j.aca.2020.03.013.
- Nurrahmah, Nurrahmah, Kikie Trivia Amalia, Hermin Sulistyarti, and Akhmad Sabarudin. 2022. “Fast Colorimetric Detection of Albumin-to-Creatinine Ratio Using Paper-Based Analytical Devices with Alkaline Picrate and Bromothymol Blue Reagents.” *Journal of Applied Pharmaceutical Science* 12(1):140–48. doi: 10.7324/JAPS.2021.120113.
- Van Oordt, Thomas, Yannick Barb, Roland Zengerle, and Felix Von Stetten. 2011. “Miniature Stick-Packaging - An Industrial Technology for Pre-Storage and Release of Reagents in Lab-on-a-Chip Systems.” *15th International Conference on Miniaturized Systems for Chemistry and Life Sciences 2011, MicroTAS 2011* 1:437–39.
- Osei-Owusu, Patrick, Eileen Collyer, Shelby A. Dahlen, Raisa E. Adams, and Veronica J. Tom. 2022. “Maladaptation of Renal Hemodynamics Contributes to Kidney Dysfunction Resulting from Thoracic Spinal Cord Injury in Mice.” *American Journal of Physiology - Renal Physiology* 323(2):F120–40. doi: 10.1152/ajprenal.00072.2022.
- Paddle, J. J. 2002. “Evaluation of the Haemoglobin Colour Scale and Comparison with the HemoCue Haemoglobin Assay.” *Bulletin of the World Health Organization* 80(10):813–16.
- Pagana, Kathleen, and Timothy Pagana. 2014. “Mosby’s Manual of Diagnostic and Laboratory Techniques.”
- Pal, Siddhartha, Somenath Lohar, Manjira Mukherjee, Pabitra Chattopadhyay, and Koushik Dhara. 2016. “A Fluorescent Probe for the Selective Detection of Creatinine in Aqueous Buffer Applicable to Human Blood Serum.” *Chemical Communications* 52(94):13706–9. doi: 10.1039/C6CC07291G.
- Parekh, A. C., S. Cook, C. Sims, and D. H. Jung. 1976. “A New Method for the

- Determination of Serum Creatinine Based on Reaction with 3,5-Dinitrobenzoyl Chloride in an Organic Medium.” *Clinica Chimica Acta* 73(2):221–31. doi: 10.1016/0009-8981(76)90167-4.
- Parmar, Ankita K., Nikunj N. Valand, Kalpesh B. Solanki, and Shobhana K. Menon. 2016. “Picric Acid Capped Silver Nanoparticles as a Probe for Colorimetric Sensing of Creatinine in Human Blood and Cerebrospinal Fluid Samples.” *The Analyst* 141(4):1488–98. doi: 10.1039/C5AN02303C.
- Perez-Padilla, R., J. Salas, G. Carrillo, M. Selman, and R. Chapela. 1992. “Prevalence of High Hematocrits in Patients with Interstitial Lung Disease in Mexico City.” *Chest* 101(6):1691–93. doi: 10.1378/chest.101.6.1691.
- Pourreza, Nahid, and Hamed Golmohammadi. 2015. “Hemoglobin Detection Using Curcumin Nanoparticles as a Colorimetric Chemosensor.” *RSC Advances* 5(3):1712–17. doi: 10.1039/c4ra10386f.
- Prabhu, Sumedha Nitin, Subhas Chandra Mukhopadhyay, and Guozhen Liu. 2022. “Sensors and Techniques for Creatinine Detection: A Review.” *IEEE Sensors Journal* 22(12):11427–38. doi: 10.1109/JSEN.2022.3174818.
- Preetam, Subham, Bishal Kumar Nahak, Santanu Patra, Dana Cristina Toncu, Sukho Park, Mikael Syväjärvi, Gorka Orive, and Ashutosh Tiwari. 2022. “Emergence of Microfluidics for next Generation Biomedical Devices.” *Biosensors and Bioelectronics: X* 10. doi: 10.1016/j.biosx.2022.100106.
- Pundir, C. S., Sandeep Yadav, and Ashok Kumar. 2013. “Creatinine Sensors.” *TrAC - Trends in Analytical Chemistry* 50:42–52. doi: 10.1016/j.trac.2013.04.013.
- Randviir, Edward P., and Craig E. Banks. 2013. “Analytical Methods for Quantifying Creatinine within Biological Media.” *Sensors and Actuators B: Chemical* 183:239–52. doi: 10.1016/j.snb.2013.03.103.
- Rasmi, Yousef, Xiaokang Li, Johra Khan, Tugba Ozer, and Jane Ru Choi. 2021. “Emerging Point-of-Care Biosensors for Rapid Diagnosis of COVID-19: Current Progress, Challenges, and Future Prospects.” *Analytical and Bioanalytical Chemistry* 413(16):4137–59. doi: 10.1007/s00216-021-03377-6.
- Raveendran, Jeethu, Resmi P.E., Ramachandran T., Bipin G. Nair, and T. G. Satheesh Babu. 2017. “Fabrication of a Disposable Non-Enzymatic Electrochemical Creatinine Sensor.” *Sensors and Actuators B: Chemical* 243:589–95. doi: 10.1016/j.snb.2016.11.158.
- Renault, Christophe, Karen Scida, Kyle N. Knust, Stephen E. Fosdick, and Richard M. Crooks. 2013. “Paper-Based Bipolar Electrochemistry.” *Journal of Electrochemical Science and Technology* 4(4):146–52. doi: 10.5229/JECST.2013.4.4.146.
- Ríos, Ángel, Mohammed Zougagh, and Mónica Avila. 2012. “Miniaturization through Lab-on-a-Chip: Utopia or Reality for Routine Laboratories? A Review.” *Analytica Chimica Acta* 740:1–11. doi: 10.1016/j.aca.2012.06.024.
- Robert Gorkin, Jiwoon Park, Jonathan Siegrist, Mary Amasia, Beom Seok Lee, Jong-Myeon Park, Jintae Kim, Hanshin Kim, Marc Madou, and Yoon-Kyoung Cho. 2010. “Centrifugal Microfluidics for Biomedical Applications.” *Lab on a Chip* 10:1758–73.
- Rossini, Eduardo Luiz, Maria Izabel Milani, Emanuel Carrilho, Leonardo Pezza, and Helena Redigolo Pezza. 2018. “Simultaneous Determination of Renal Function Biomarkers in Urine Using a Validated Paper-Based Microfluidic Analytical Device.” *Analytica Chimica Acta* 997:16–23. doi: 10.1016/j.aca.2017.10.018.
- S., Berentsen, and Tjonnfjord G.E. 2012. “Diagnosis and Treatment of Cold Agglutinin Mediated Autoimmune Hemolytic Anemia.” *Blood Reviews* 26(3):107–15.
- Saidi, Tarik, Mohammed Moufid, Omar Zaim, Nezha El Bari, and Benachir Bouchikhi. 2018. “Voltammetric Electronic Tongue Combined with Chemometric Techniques

- for Direct Identification of Creatinine Level in Human Urine.” *Measurement* 115:178–84. doi: 10.1016/j.measurement.2017.10.044.
- Sanjay, Sharma T., Guanglei Fu, Maowei Dou, Feng Xu, Rutao Liu, Hao Qi, and Xiujun Li. 2015. “Biomarker Detection for Disease Diagnosis Using Cost-Effective Microfluidic Platforms.” *Analyst* 140(21):7062–81. doi: 10.1039/c5an00780a.
- Sari, Mayang, Saskia De Pee, Elviyanti Martini, Susilowati Herman, Sugiatmi, Martin W. Bloem, and Ray Yip. 2001. “Estimating the Prevalence of Anaemia: A Comparison of Three Methods.” *Bulletin of the World Health Organization* 79(6):506–11.
- Sayad, Abkar, Fatimah Ibrahim, Shah Mukim Uddin, Jongman Cho, Marc Madou, and Kwai Lin Thong. 2018. “A Microdevice for Rapid, Monoplex and Colorimetric Detection of Foodborne Pathogens Using a Centrifugal Microfluidic Platform.” *Biosensors and Bioelectronics* 100:96–104. doi: 10.1016/j.bios.2017.08.060.
- Shander, Aryeh. 2004. “Anemia in the Critically Ill.” *Critical Care Clinics* 20(2):159–78. doi: 10.1016/j.ccc.2004.01.002.
- Shariati, Sattar, and Gholamreza Khayatian. 2022. “A New Method for Selective Determination of Creatinine Using Smartphone-Based Digital Image.” *Microfluidics and Nanofluidics* 26(4). doi: 10.1007/s10404-022-02538-y.
- Shih, Chih Hsin, Chien Hsing Lu, Jia Huei Wu, Chia Hui Lin, Ziunn Min Wang, and Chi Yu Lin. 2012. “Prothrombin Time Tests on a Microfluidic Disc Analyzer.” *Sensors and Actuators, B: Chemical* 161(1):1184–90. doi: 10.1016/j.snb.2011.11.025.
- Sims, C., and A. C. Parekh. 1977. “Determination of Serum Creatinine by Reaction with Methyl 3,5 Dinitrobenzoate in Methyl Sulfoxide.” *Annals of Clinical Biochemistry* 14(4):227–32. doi: 10.1177/000456327701400161.
- Sittiwong, Jarinya, and Fuangfa Unob. 2016. “Paper-Based Platform for Urinary Creatinine Detection.” *Analytical Sciences* 32(6):639–43. doi: 10.2116/analsci.32.639.
- Smith, Suzanne, Dario Mager, Alexandra Perebikovsky, Ehsan Shamloo, David Kinahan, Rohit Mishra, Saraí M. Torres Delgado, Horacio Kido, Satadal Saha, Jens Ducreé, Marc Madou, Kevin Land, and Jan G. Korvink. 2016. “CD-Based Microfluidics for Primary Care in Extreme Point-of-Care Settings.” *Micromachines* 7(2). doi: 10.3390/mi7020022.
- Sohrabi, Somayeh, Nour Kassir, and Mostafa Keshavarz Moraveji. 2020. “Droplet Microfluidics: Fundamentals and Its Advanced Applications.” *RSC Advances* 10(46):27560–74. doi: 10.1039/d0ra04566g.
- Songjaroen, Tamsiri, Thitima Maturus, Aussawapong Sappat, Adisorn Tuantranont, and Wanida Laiwattanapaisal. 2009. “Portable Microfluidic System for Determination of Urinary Creatinine.” *Analytica Chimica Acta* 647(1):78–83. doi: 10.1016/j.aca.2009.05.014.
- Steigert, J., T. Brenner, M. Grumann, L. Riegger, S. Lutz, R. Zengerle, and J. Ducreé. 2007. “Integrated Siphon-Based Metering and Sedimentation of Whole Blood on a Hydrophilic Lab-on-a-Disk.” *Biomedical Microdevices* 9(5):675–79. doi: 10.1007/s10544-007-9076-0.
- Steigert, J., M. Grumann, M. Dube, W. Streule, L. Riegger, T. Brenner, P. Koltay, K. Mittmann, R. Zengerle, and J. Ducreé. 2006. “Direct Hemoglobin Measurement on a Centrifugal Microfluidic Platform for Point-of-Care Diagnostics.” *Sensors and Actuators, A: Physical* 130–131(SPEC. ISS.):228–33. doi: 10.1016/j.sna.2006.01.031.
- Stott, G. J., and S. M. Lewis. 1995. “A Simple and Reliable Method for Estimating Haemoglobin.” *Bulletin of the World Health Organization* 73(3):369–73.
- Sümnig, Ariane, Gregor Hron, Antje Westphal, Astrid Petersmann, Thomas Kohlmann,

- Andreas Greinacher, and Thomas Thiele. 2015. "The Impact of Noninvasive, Capillary, and Venous Hemoglobin Screening on Donor Deferrals and the Hemoglobin Content of Red Blood Cells Concentrates: A Prospective Study." *Transfusion* 55(12):2847–54. doi: 10.1111/trf.13241.
- Sununta, Suphanan, Poomrat Rattanasat, Orawon Chailapakul, and Narong Praphairaksit. 2018. "Microfluidic Paper-Based Analytical Devices for Determination of Creatinine in Urine Samples." *Analytical Sciences* 34(1):109–13. doi: 10.2116/analsci.34.109.
- Sutariya, Pinkesh G., Alok Pandya, Anand Lodha, and Shobhana K. Menon. 2016. "A Simple and Rapid Creatinine Sensing via DLS Selectivity, Using Calix[4]Arene Thiol Functionalized Gold Nanoparticles." *Talanta* 147:590–97. doi: 10.1016/j.talanta.2015.10.029.
- Suzuki, Mayu, Mitsuyoshi Furuhashi, Shogo Sesoko, Kazuhiro Kosuge, Toshio Maeda, Kenichiro Todoroki, Koichi Inoue, Jun Zhe Min, and Toshimasa Toyooka. 2016. "Determination of Creatinine-Related Molecules in Saliva by Reversed-Phase Liquid Chromatography with Tandem Mass Spectrometry and the Evaluation of Hemodialysis in Chronic Kidney Disease Patients." *Analytica Chimica Acta* 911:92–99. doi: 10.1016/j.aca.2016.01.032.
- Talalak, Kwanrutai, Julaluk Noiphung, Tamsiri Songjaroen, Orawon Chailapakul, and Wanida Laiwattanapaisal. 2015. "A Facile Low-Cost Enzymatic Paper-Based Assay for the Determination of Urine Creatinine." *Talanta* 144:915–21. doi: 10.1016/j.talanta.2015.07.040.
- Tambaru, David, Reski Helena Rupilu, Fidelis Nitti, Imanuel Gauru, and Suwari. 2017. "Development of Paper-Based Sensor Coupled with Smartphone Detector for Simple Creatinine Determination." P. 020095 in.
- Taparia, Nikita, Kimsey C. Platten, Kristin B. Anderson, and Nathan J. Sniadecki. 2017. "A Microfluidic Approach for Hemoglobin Detection in Whole Blood." *AIP Advances* 7(10). doi: 10.1063/1.4997185.
- Tefferi, Ayalew. 2003. "Polycythemia Vera: A Comprehensive Review and Clinical Recommendations." *Mayo Clinic Proceedings* 78(2):174–94. doi: 10.4065/78.2.174.
- Thompson, Lauren E., and Melanie S. Joy. 2022. "Endogenous Markers of Kidney Function and Renal Drug Clearance Processes of Filtration, Secretion, and Reabsorption." *Current Opinion in Toxicology* 31. doi: 10.1016/j.cotox.2022.03.005.
- Toh, Rou Jun, Weng Kung Peng, Jongyoon Han, and Martin Pumera. 2014. "Direct in Vivo Electrochemical Detection of Haemoglobin in Red Blood Cells." *Scientific Reports* 4. doi: 10.1038/srep06209.
- Toora, B. D., and G. Rajagopal. 2002. "Measurement of Creatinine by Jaffe's Reaction - Determination of Concentration of Sodium Hydroxide Required for Maximum Color Development in Standard, Urine and Protein Free Filtrate of Serum." *Indian Journal of Experimental Biology* 40(3):352–54.
- Tortajada-Genaro, Luis A., Sara Santiago-Felipe, Sergi Morais, José Antonio Gabaldón, Rosa Puchades, and Ángel Maquieira. 2012. "Multiplex DNA Detection of Food Allergens on a Digital Versatile Disk." *Journal of Agricultural and Food Chemistry* 60(1):36–43. doi: 10.1021/jf2037032.
- Tseng, Chin-Chung, Ruey-Jen Yang, Wei-Jhong Ju, and Lung-Ming Fu. 2018. "Microfluidic Paper-Based Platform for Whole Blood Creatinine Detection." *Chemical Engineering Journal* 348:117–24. doi: 10.1016/j.cej.2018.04.191.
- Tsikas, Dimitrios, Alexander Wolf, Anja Mitschke, Frank Mathias Gutzki, Wolfgang Will, and Michael Bader. 2010. "GC-MS Determination of Creatinine in Human Biological Fluids as Pentafluorobenzyl Derivative in Clinical Studies and Biomonitoring: Inter-Laboratory Comparison in Urine with Jaffé, HPLC and Enzymatic Assays." *Journal*

- of Chromatography B: Analytical Technologies in the Biomedical and Life Sciences* 878(27):2582–92. doi: 10.1016/j.jchromb.2010.04.025.
- Vaquer, Andreu, Enrique Barón, and Roberto De La Rica. 2022. “Dissolvable Polymer Valves for Sweat Chrono-Sampling in Wearable Paper-Based Analytical Devices.” *ACS Sensors* 7(2):488–94. doi: 10.1021/acssensors.1c02244.
- Vashist, Sandeep Kumar, Peter B. Luppá, Leslie Y. Yeo, Aydogan Ozcan, and John H. T. Luong. 2015. “Emerging Technologies for Next-Generation Point-of-Care Testing.” *Trends in Biotechnology* 33(11):692–705. doi: 10.1016/j.tibtech.2015.09.001.
- VICARI AURELIO M., PONZONI MAURILIO, ALBERETTO MIRIAM, MARTANI CARLA, PONTIROLI ANTONIO E., and FOLLI FRANCO. 1998. “Erythrocytosis in a Patient with Chronic Obstructive Pulmonary Disease.” *Haematologica* (February):462–70.
- Vitali, Luciano, Samantha Gonçalves, Victor Rodrigues, Valfredo T. Fávere, and Gustavo A. Micke. 2017. “Development of a Fast Method for Simultaneous Determination of Hippuric Acid, Mandelic Acid, and Creatinine in Urine by Capillary Zone Electrophoresis Using Polymer Multilayer-Coated Capillary.” *Analytical and Bioanalytical Chemistry* 409(7):1943–50. doi: 10.1007/s00216-016-0142-4.
- Wang, An-Bang, Po-Hsuan Fang, Yu Chu Su, Yu-Wen Hsieh, Chii-Wann Lin, Yi-Ting Chen, and Ying-Chi Hsu. 2016. “A Novel Lab-on-a-Chip Design by Sequential Capillary–Gravitational Valves for Urinary Creatinine Detection.” *Sensors and Actuators B: Chemical* 222:721–27. doi: 10.1016/j.snb.2015.08.111.
- Wang, Kewen, Rongan Liang, Hualing Chen, Shemin Lu, Shuhai Jia, and Wanjun Wang. 2017. “A Microfluidic Immunoassay System on a Centrifugal Platform.” *Sensors and Actuators B: Chemical* 251:242–49. doi: 10.1016/j.snb.2017.04.033.
- Weiskopf, Richard B., Maurene K. Viele, John Feiner, Scott Kelley, Jeremy Lieberman, Mariam Noorani, Jacqueline M. Leung, Dennis M. Fisher, William R. Murray, Pearl Toy, and Mark A. Moore. 1998. “Human Cardiovascular and Metabolic Response to Acute, Severe Isovolemic Anemia.” *Jama* 279(3):217–21. doi: 10.1001/jama.279.3.217.
- Williams, Michael D., Raymond Reeves, Linda S. Resar, and Herbert H. Hill. 2013. “Metabolomics of Colorectal Cancer: Past and Current Analytical Platforms.” *Analytical and Bioanalytical Chemistry* 405(15):5013–30. doi: 10.1007/s00216-013-6777-5.
- Wong, Amy P., Malancha Gupta, Sergey S. Shevkoplyas, and George M. Whitesides. 2008. “Egg Beater as Centrifuge: Isolating Human Blood Plasma from Whole Blood in Resource-Poor Settings.” *Lab on a Chip* 8(12):2032–37. doi: 10.1039/b809830c.
- Wong, Tuck, Ulrich Schwaneberg, Rainer Sturmer, Bernhard Hauer, and Michael Breuer. 2006. “A Filter Paper-Based Assay for Laboratory Evolution of Hydrolases and Dehydrogenases.” *Combinatorial Chemistry & High Throughput Screening* 9(4):289–93. doi: 10.2174/138620706776843228.
- Yager, Paul, Thayne Edwards, Elain Fu, Kristen Helton, Kjell Nelson, Milton R. Tam, and Bernhard H. Weigl. 2006. “Microfluidic Diagnostic Technologies for Global Public Health.” *Nature* 442(7101):412–18. doi: 10.1038/nature05064.
- Yamada, Kentaro, Koji Suzuki, and Daniel Citterio. 2017. “Text-Displaying Colorimetric Paper-Based Analytical Device.” *ACS Sensors* 2(8):1247–54. doi: 10.1021/acssensors.7b00464.
- Yang, Xiaoxi, Nathaniel Z. Piety, Seth M. Vignes, Melody S. Benton, Julie Kanter, and Sergey S. Shevkoplyas. 2013. “Simple Paper-Based Test for Measuring Blood Hemoglobin Concentration in Resource-Limited Settings.” *Clinical Chemistry* 59(10):1506–13. doi: 10.1373/clinchem.2013.204701.

- Yung, Chong Wing, Jason Fiering, Andrew J. Mueller, and Donald E. Ingber. 2009. "Micromagnetic–Microfluidic Blood Cleansing Device." *Lab on a Chip* 9(9):1171. doi: 10.1039/b816986a.
- Zehnle, S., M. Rombach, R. Zengerle, F. von Stetten, and N. Paust. 2017. "Network Simulation-Based Optimization of Centrifugo-Pneumatic Blood Plasma Separation." *Biomicrofluidics* 11(2):024114. doi: 10.1063/1.4979044.
- Zhou, Zhaoying, Zhonglin Wang, and Liwei Lin. 2012. "Microsystems and Nanotechnology." *Microsystems and Nanotechnology* 9783642182:1–1004. doi: 10.1007/978-3-642-18293-8.
- Zhu, Hongying, Ikbal Sencan, Justin Wong, Stoyan Dimitrov, Derek Tseng, Keita Nagashima, and Aydogan Ozcan. 2013. "Cost-Effective and Rapid Blood Analysis on a Cell-Phone." *Lab on a Chip* 13(7):1282–88. doi: 10.1039/c3lc41408f.

## LIST OF PUBLICATIONS

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### Journals:

1. **Rishi Ram**, Dharmendra Kumar, Arnab Sarkar, “A smartphone-integrated portable rotating platform for estimation of concentration level of plasma-creatinine using whole human blood”, *Talanta*. 2022, Sep 24:123960. IF: 6.556
2. **Rishi Ram**, Neha Gautam, Pradip Paik, Santosh Kumar, Arnab Sarkar, “A low cost novel paper-based sensor for measuring starch adulteration in milk”, *Microfluidics and Nanofluidics*. 2022 Dec, 26(12):1-9. IF: 3.090
3. **Rishi Ram**, Dharmendra Kumar, Pradip Paik, Arnab Sarkar, “A simple and low-cost paper-based device for simultaneous determination of hematocrit and hemoglobin levels in point-of-care settings”, *Physics of Fluid*. (revision submitted). IF: 4.980
4. Sudip Chattopadhyay, **Rishi Ram**, Arnab Sarkar, “GoraChand Dutta, Suman Chakraborty, Reagent-free hemoglobin estimation on a spinning disc”, *Microchemical Journal*. 2021 Sep 1; 168:106463. IF: 5.304
5. Sudip Chattopadhyay, **Rishi Ram**, Arnab Sarkar, Suman Chakraborty, “Smartphone-based automated estimation of plasma creatinine from finger-pricked blood on a paper strip via single-user step sample-to-result integration”, *Measurement*. 2022 Jun 21:111492
6. Sumit Kumar, **Rishi Ram**, Arnab Sarkar, Sunando Das Gupta, Suman Chakraborty, “Rapid determination of erythrocyte sedimentation rate (ESR) by an electrically driven blood droplet biosensor”, *Biomicrofluidics*. 2020 Nov 1; 14(6):064108. IF: 3.258
7. Sudip Chattopadhyay, **Rishi Ram**, Arnab Sarkar, Suman Chakraborty, “Towards a Portable Automated Hematology Analyzer: Reagent-free Hemoglobin estimation from

Finger-Prick Blood via Smartphone-interfaced Point-of-Care Spectrometry”, Journal of Medical Systems. (Under review).

**Patents:**

1. Sudip Chattopadhyay, **Rishi Ram**, Arnab Sarkar, Suman Chakraborty, “A point of care system comprising reagent-free hemoglobin estimation kit”, Indian Patent. (Applied)
2. Sumit Kumar, Arnab Sarkar, **Rishi Ram**, Sunando DasGupta, Suman Chakraborty, “A System and Method for measuring blood Hematocrit level and Erythrocyte Sedimentation Rate (ESR) from a single drop of blood”, Indian Patent. (Applied)
3. **Rishi Ram**, Dharmendra Kumar, Arnab Sarkar, “A frugal and portable point-of-care system for estimating plasma- creatinine using whole human blood”, Indian Patent. (Applied)