



## Wireless Powered Lab-on-Disc Platform for Measurements on the Spin

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## Wireless Powered Lab-on-Disc Platform for Measurements on the Spin

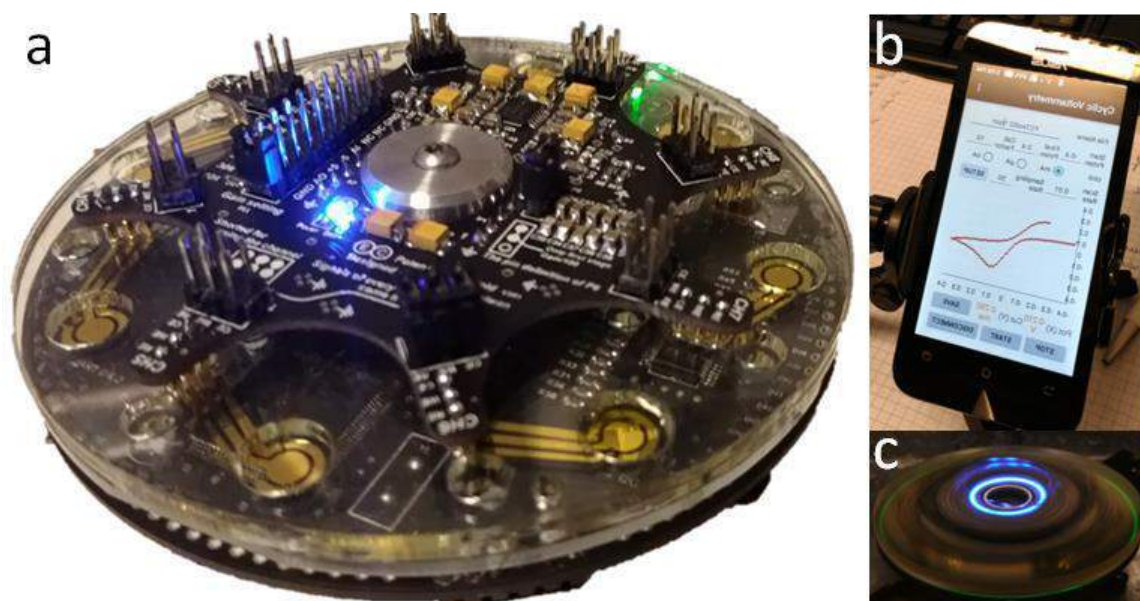
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We integrate Qi wireless power, Arduino microcontroller, Bluetooth signal transmission and lab-on-disc technique for developing a sample-to-answer biosensing platform (Fig. a). The wireless powered lab-on-disc platform (PloD) connects to an Android smartphone for real-time digital to analog converter (DAC) and analog to digital converter (ADC) control. Furthermore, the PloD is capable of measuring data while spinning, as shown in Fig. b and c.



The first application of the PloD is a potentiostat for electrochemical based biosensing [1], we have successfully measure Ferri Ferrocyanides Current-Potential curve while spinning from 0 to 3000 rpm. There are various lab-on-disc applications[2] can be carry out by the PloD platform for the future stand-alone diagnostics and healthcare systems.

### Reference

- [1] K. Zor, A. Heiskanen, C. Caviglia, M. Vergani, E. Landini, F. Shah, M. Carminati, A. Martinez-Serrano, T. R. Moreno, M. Kokaia, D. Benayahu, Z. Keresztes, D. Papkovsky, U. Wollenberger, W. E. Svendsen, M. Dimaki, G. Ferrari, R. Raiteri, M. Sampietro, M. Dufva, and J. Emneus, "A compact multifunctional microfluidic platform for exploring cellular dynamics in real-time using electrochemical detection", *Rsc Advances*, vol. 4 (2014), pp. 63761 - 63771.
- [2] P. Kassal, J. Kim, R. Kumar, W. R. de Araujo, I. M. Steinberg, M. D. Steinberg, and J. Wang, "Smart bandage with wireless connectivity for uric acid biosensing as an indicator of wound status", *Electrochemistry Communications*, vol. 56 (2015), pp. 6 - 10.