Austin Journal of Biosensors & Bioelectronics

Open Access

Austin Publishing Group

Editorial

The 'Revival' of Nanosensors

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Received: September 15, 2014; **Accepted:** October 20, 2014; **Published:** January 05, 2015

Editorial

Today, the 'nano' world has penetrated deeply not only in the scientific research, but also in people's daily life. The breakthrough of nanotechnology in Smartphone and the excitement of nanoparticles in skin care products, for examples, have undoubtedly rendered the credible position of nanotechnology in multiple applications. In the bio sensing field, we expect the same exciting findings.

Gold nanoparticles (AuNPs), in particular, are one of the well-studied nanomaterials thanks to their unique optical property. The synthesis of AuNPs can be traced back to 1857 by Michael Faraday [1]. This material somehow began to gain the global interest after a milestone discovery by Mirkin, Alivisators and co-workers in 1996 [2]. They reported the versatile interaction between AuNPs and thiolated-DNA, which enables a precise and tunable control on the aggregation states of the particles. Even after 18 years, this field is still vibrant and exciting, with remarkable sensitivity of AuNPs-derived assays reported from micro- to zeptomolar. Similarly, another nanomaterial - metal nanoclusters (NCs) has been studied over the past half-century [3]. A paradigm shift was triggered by Dickson's group in the early of 2000s, by using oligonucleotide as bio-scaffold to prepare silver NCs (AgNCs) [4]. These small-sized (1-2 nm) and fluorogenic AgNCs have overcome the disadvantages of the existing fluorophores. It is now a thriving field of interest.

The 'revival' of existing probes is not surprising in the bio sensing field. Our hope is that the new means from these discoveries will continue to generate greater improvement on the biosensors and meet the growing clinical demands. The nano science has undeniably played a key role on these fronts. While the study of AuNPs and AgNCs sustainably is growing strong, we are expecting the next ground-breaking're-emergence' of nanoprobes in the near future.

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Citation: New SY. The 'Revival' of Nanosensors. Austin J Biosens & Bioelectron. 2015;1(1): 1.