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**Copper Based Multifunctional Nanocrystals for a Pragmatic Approach towards Cancer Theranostics****M. Sheikh Mohamed<sup>1</sup>, Srivani Veeranarayanan<sup>1</sup>, Aby Cheruvathoor Poulouse<sup>1</sup>, Toru Maekawa<sup>1</sup>, D. Sakthi Kumar<sup>1</sup>, Yasushi Sakamoto<sup>2</sup>**<sup>1</sup>Bio Nano Electronics Research Centre, Toyo University, Japan<sup>2</sup>Biomedical Research Centre, Saitama Medical University, Japan

**M**ultifunctional nanocrystals (NCs) for bio-applications are gaining momentum due to their advantageous role of performing multiple functions simultaneously. For example, NCs with simultaneous imaging and therapeutic potential are highly attractive as they can serve for image-guided therapy and can be considered for personalized cancer medicine. Especially Cu based NCs are garnering increased attention recently for their ease of preparation, biocompatibility and multimodal applications. Herein we present a series of plasmonically active Cu based NCs for cancer theranostics. The main features that would be discussed will be about multi-stimuli responsive chemotherapeutics as well as multimodal drug-free alternative theranostic options. The application of these NCs in diagnostic modalities such as photoacoustic, X-ray contrast, and optical (visible and NIR) imaging would be discussed. As far as therapeutic modality is concerned, chemo (external stimuli such as NIR and visible light responsive drug release), photothermal and photodynamic therapeutic options would be presented. The immense potential of these NCs cannot be undermined and they are sure to make a lasting impression in the nanomedicine/theranostics arena.

**Biography**

Dr. M. Sheikh Mohamed, currently a post-doctoral researcher at Bio-Nano Electronics Research Centre, Toyo University, Japan has nearly 8 years of research experience in the field of Bio-Nano Fusion Sciences, with a focus on synthesis and application of multifunctional nanoparticles for cancer theranostics. He has received best young researcher and best poster awards at International conferences and has published 15 peer-reviewed research articles with five cover pages in reputed journals, which have also been featured as news articles. Previously, he received the University Gold Medal during his M.Phil. in India and subsequently the prestigious Monbukagakusho Scholarship to pursue his Ph.D. in Japan.

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