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Preface

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Preface

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Nanoscale science and technology have been the most innovative fields over the past decade and promise to be important in many fields like food science in the near future. Nanotechnology allows precise control and manipulation of matters at the nanometer level, with desired physiochemical properties such as high catalytic activity and strong photoluminescence. Nanotechnology has shown unprecedented opportunities for the preparation of materials and fabrication of systems for many revolutionary applications in medicine, cosmetics, agriculture and food.

Food safety remains a critical issue worldwide. Food contaminated with harmful pathogens, microbes, toxins or chemical substances such as pesticides, veterinary drugs, antibiotics, environmental pollutants, as well as illegal additives and adulterants contributes to more than 200 diseases, posing a serious threat to human health. In order to manage and address the problems associated with foodborne illnesses, it is highly desirable to develop sensitive, easy-to-use and affordable analytical

approaches for rapid detection of food contaminants and toxicants. Many nanomaterial-based sensors have shown their advantages over conventional tools to ensure the safety and quality of foodstuffs, including simplicity, low cost, and on-site analysis.

This special issue includes 11 review articles that provide a comprehensive overview of the current advances in the design and development of nanomaterial-based sensors for food analysis. The issue focuses on the use of nanomaterials such as noble metal nanoparticles, metal nanoclusters, quantum dots and carbon dots for food analysis through colorimetric, fluorescent, and electrochemical detections. Recent trends in the development of portable and robust devices for rapid assessment of food safety as well as the challenges for practical implementation and future research directions are also provided.

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