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The development of materials chemistry, especially in the field of nanotechnology, has led to valuable contributions for biomedicine. The common point achieved in this important area is the preparation of effective, functional, stable and economical materials for purposeful use. Among many research topics in the biomedicine, (bio)sensing and drug delivery occupy a major place. It has been showed that various nano/micromaterials including metallic-based nano/microparticles, polymer structures and carbon-based materials have great potential in (bio)sensing and drug delivery owing to their excellent mechanical, chemical, structural and electrical properties [1-5]. The purpose of this presentation is to present our recent studies on the preparation, characterization and applications of these materials. Certain studies will be shared in this concept. Applications of these materials include electrochemical sensor studies for anticancer drug, DNA damage, amino acid sensing and nano/micromotor studies for drug delivery and cancer diagnosis. Electrochemical sensors, which are based on electrochemical reactions and convert analyte-related data into measurable signal, are commonly used tools for the quantitative and qualitative detection of important analytes. Micro/nanomotors, which have the ability of converting energy into motion, are also one of the promising technologies to realize sensing and targeted delivery. Therefore, this talk will summarize the advantages, challenges, and future prospects of these promising systems with the integration of metallic-based nano/microparticles, polymeric structures, and carbon-based materials.

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References

[1] J. Wang, W. Gao, ACS Nano, 6 (2012) 5745-5741.
[2] M. Güngör, H.K. Kaya, F. Kuralay, Surf. Interfaces, 30 (2022) 101839.
[3] V. Sanko, F. Kuralay, Biosensors, 13 (2023) 333.
[4] G. Maroli, V. Abarintos, A. Piper, A. Merkoçi, Small, 19 (2023) 2302136.
[5] S.E. Demirbüken, E. Öztürk, M.A. Güngör, B. Garipcan, F. Kuralay, Colloids Surf., B, 241 (2024) 114019.