Future of Nanotechnology in Pakistan: A Paradigm Shift
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Editorial

Nanotechnology is controlled manipulation of matter at dimensions approximately between 1 and 100 nano meters for novel applications by exploiting phenomenon and properties arise due to nano meter length scale. It creates useful/functional structures, devices, and systems by manipulating materials at atomic, molecular and macromolecular scales where properties of same materials are significantly different while at large scale [1].

Currently, nanotechnology involvement has become indispensable in many areas of human activity. It is helping to improve, transform, various technology and industry sectors: healthcare, drug delivery, energy, environmental science, food security, cosmetics and transportation, among many others [2]. Now nanotechnology has become a big economic activity all over the world. It has played a strong role in the progress of developed countries. The economic, political and social measures related to nanotechnology can provide potential tools for developing countries to fight against poverty. Like any other developing country, most of the Pakistani population also lack access to healthcare, drinkable water, sanitation, suitable housing and cooking facilities [3]. Nanotechnology applications in various industrial sectors from energy to medicines and clean water have brought radical changes in the life of many countries population across the globe. Based on these successful strategies by implementing nanotechnology, undoubtedly, Pakistan can also make potential advancements through nanotechnology to address core issues of 225 million people. In 2014, Pakistan Council of Science and Technology under the Ministry of Science and Technology formed a think tank of country’s well known scientists in the field of nanotechnology to work for the government to identify and prioritize R & D areas and future technologies that would be required for Nanotechnology by 2025. The think tank rightly identified the 9 key prioritized areas in nanoscience and technology: Energy, Biomedical sciences, Industrial & Engineering Materials, Nanofabrication & Devices, Human Resource development for nanoscience and technology, Clean Water & Environment, Ethics, Safety & Regulations, Food & Agriculture and Catalysis [4].

All the major issues of Pakistan are covered in these prioritized areas which can be addressed by nanotechnology for a paradigm shift. But now our country required concrete steps by making policy and legal framework, availability of funding and investment, and development of human resource to create and social and economic impact. Several institutes are working in Pakistan in the field of nanotechnology. Pak-Austria Fachhochschule Institute of Applied Sciences and Technology Haripur is a recent addition for skilled human development [5] but it is not sufficient. If Pakistan really wants to get benefits from the nanotechnology, industry and academia have to join to identify and find nanotechnology-based solutions to ease social and economic burden of the country. The Superior University Lahore is taking solid steps by developing industry-academia collaboration in the field of technology through 3U1M program where students spent their last two semesters. Faculty of sciences is leading in nanotechnology and nanobiotechnology to produce graduates having skills in advance technologies.

References:

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