

Chapter 1: Introduction and Scope of Applied Chemistry

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Abstract: Applied Chemistry is a lively dynamic science that can be associated with the fundamental values of chemistry and the practical use of the industrial society, medicine, environmental science, and technologies in the real-life. The chapter will also seek to explore the scope of Applied Chemistry, its applicability to the real-life problems and how it leads to the creation of a better state in the various industries. The discipline does not rely on the conceptual comprehension of chemistry but it puts into consideration the practical aspect of the chemical processes, materials, and products, which portrays in the daily lives. In the present case, Applied Chemistry has been the source of innovation in the spheres of the pharmaceutical, petro chemical, agricultural and renewable energy. The applied chemists create new materials, processes, and technologies out of the chemical reactions and materials science which may add value to the quality of life. As it is stated in the chapter, the centre of the stage is why Applied Chemistry has remained in the centre of stage in the development of strongly sustainable solutions that involve development of green chemistry methods, development of waste management and clean energy technology. The chapter then explains the interdisciplinary nature of Applied Chemistry that incorporates the knowledge of other sciences like biology, physics, and engineering. That holistically, it is possible to work out solutions to the current problems that are more efficient and sustainable such as climate change, pollution, or resource depletion. The second trend that is undertaken in the chapter is that of the emerging trends in applied chemistry like the nanotechnology, biotechnology and materials science that will bring the future of this field in itself. This chapter will shed light on the importance of the Applied Chemistry considering the scientific, industrial, and societal development by providing a concise review of the numerous applications and importance of the discipline. This science is broad in nature and its opportunities in solving the world problems have remained to grow and hence an important topic of research and findings.

Keywords: Applied chemistry, Pure chemistry, Industrial applications, Medicine, Agriculture, Interdisciplinary.

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1.1. Introduction

The applied branch of chemical science is known as Applied Chemistry and it deals with the application of the theoretical concepts of the chemicals on practical solutions of real problems. Unlike pure chemistry, which seeks to grow basic knowledge in relation to matter and its behavior, applied chemistry seeks to employ the same knowledge to develop new materials, processes and products that can be of use to society and industry. It is the determining element between a Laboratory discovery and commercial/practical application. The field of application of applied chemistry is extremely broad, and it intersects with the vast majority of spheres of the modern world. It forms the basis of many industries. One such area is in the pharmaceutical industry where applied chemists are designing and formulating new medicine as well as develop efficient processes of production at mass level. It assists in the agricultural sector to establish effective fertilisers, pesticides and herbicides in a bid to boost the production of crops. To develop bigger and better polymers, intelligent composite and advanced nanomaterials, the materials science requires applied chemistry to produce an item that can be utilized in electronics or construction. Besides, the applied chemistry is of crucial importance in environmental science. It provides some means through which pollution, water purification and development of renewable sources of energy, biofuels and enhanced batteries can be achieved. Food science Applied chemists in the food science field are involved with the preservation, flavour enhancement and food safety