

CHAPTER 12

GRAPHENE-BASED NANOCOMPOSITE FOR REMEDIATION OF INORGANIC POLLUTANTS IN WATER

VIMLESH CHANDRA*

*Department of Chemistry, Dr. Harisingh Gour Central University,
Sagar 470003, Madhya Pradesh, India*

**E-mail: vchandg@gmail.com*

ABSTRACT

Graphene, a one-atom thick planar sheet of sp^2 -bonded carbon atoms packed in a honeycomb lattice, is considered to be the mother of all graphitic materials and created tremendous interest to both physicist and chemist. Graphene and its derivative have potential applications in nanoelectronics, supercapacitors, solar cells, batteries, flexible displays, hydrogen storage, waste-water treatment, and sensors. In this chapter, a brief overview on various aspects of graphene such as discovery, synthesis, functionalization, composites, and its applications in removal and detection of aqueous inorganic pollutants had been illustrated.

12.1 INTRODUCTION

Water is the most precious natural resource on earth and supports life for people, animals, and plants. In spite of this, 1.2 billion people lack access to safe drinking water, and millions of people die annually from diseases transmitted through contaminated water.¹ This is due to the presence of trace amount of toxic organic (dyes, pesticides), inorganic (arsenic, uranium, salt ions), and biological (virus, bacteria) pollutants in water. The global population is expected to reach up to ~10 billion in 2020, and because of this, the