

# Organic polymers for CO<sub>2</sub> capture and conversion

Eshita Sharma<sup>1</sup>, Supriyanka Rana<sup>2</sup>, Isha Sharma<sup>3</sup>,  
Priyanka Sati<sup>4</sup> and Praveen Dhyani<sup>5</sup>

<sup>1</sup>Department of Molecular Biology and Biochemistry, Guru Nanak Dev University, Amritsar, Punjab, India <sup>2</sup>Faculty of Engineering Technology and Earth Resources, Universiti Malaysia Pahang, Lebuhraya Tun Razak, Gambang, Kauntan, Pahang, Malaysia <sup>3</sup>Department of Biotechnology, Chaudhary Sarwan Kumar Himachal Pradesh Krishi Vishvavidyalaya, Palampur, Himachal Pradesh, India <sup>4</sup>Graphic Era University, Dehradun, Uttarakhand, India <sup>5</sup>Department of Biotechnology, Kumaun University, Bhimtal, Uttarakhand, India

## 4.1 Introduction

In recent years, increase in carbon dioxide (CO<sub>2</sub>) is one of the main factors for global warming and climate change. The emission of CO<sub>2</sub> rose to historic peak in last few years, causing the undesirable greenhouse gas effect. The burning of gasoline producing energy is the result of popularization of automobiles considered to be a crucial contributor to CO<sub>2</sub> emission. In last few years, out of 46 Gt of total gaseous emissions 33 Gt were of carbon dioxide (Bereiter et al., 2015). Consequently, this increase in CO<sub>2</sub> emission has hit a serious issue of global warming which causes the melting of glaciers along with the desertification of land. Oceans followed by terrestrial trees are considered as the biggest source of CO<sub>2</sub> fixers. However, in 2018, 12 million hectares of forest land were destroyed by wildfires and deforestation (World urbanization prospects, n.d.). To combat this problem and prevent the life of human beings, a consensus was released worldwide to reduce the CO<sub>2</sub> emission. As a result, in 2015, 195 states agreed to reduce the risks and impacts of climate change in Paris Agreement (UNFCCC, 2015) (COP, 2017). To reduce the effect of CO<sub>2</sub> emission, it is very necessary to develop cost-effective and practical approaches. To combat this challenge, two pathways have been designed: (1) reduction of CO<sub>2</sub> emission from flue gas and (2) direct carbon capture and storage (CCS) for the removal of