

# Chapter 5

## From Theoretical Chemist to Synthesis Chemist

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### ABSTRACT

*The escape room will take place in a session for fourth-year chemistry students, specifically in the subject Laboratory of Organic Chemistry within the area of organic chemistry. Generally, chemistry students are afraid of subjects within the area of organic chemistry, so the use of gamification in them can change the students' perception of the subject, which will result in a greater number of passing grades, breaking the trend established in the subjects of the organic chemistry area of the career.*

### INTRODUCTION

*“Science is not only a discipline of reason, but also of romance and passion”  
~Stephen Hawking*

*“I am among those who think that Science has great beauty. A scientist in his laboratory is not a mere technician: he is also a child confronting natural phenomena that impress him as though they were fairy tales” ~Marie Curie*

Chemistry is a diverse and dynamic scientific discipline that plays a fundamental role in various aspects of our daily lives. With its roots in alchemy, the study of matter, its composition, properties and transformations has evolved significantly

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over the centuries (Smith, 2018). This evolution has given rise to a multitude of sub-disciplines and specializations within the field of chemistry.

In modern times, chemistry encompasses several important branches, each with its unique focus. Analytical chemistry, for example, is dedicated to the development of techniques and methods to accurately measure and quantifying chemicals in various samples (Green & Brown, 2020). Meanwhile, physical chemistry delves into the fundamental principles underlying chemical phenomena, studying topics such as thermodynamics, kinetics, and quantum mechanics (Atkins & de Paula, 2018).

Organic chemistry, a fundamental branch, focuses on the study of carbon compounds, including their synthesis and reactivity (Clayden et al., 2017). In contrast, inorganic chemistry examines the properties and behavior of inorganic compounds, often involving metals and minerals (Housecroft & Sharpe, 2017).

Biochemistry, an interdisciplinary field, bridges the gap between chemistry and biology, exploring the chemical processes that occur within living organisms, such as enzyme-catalyzed reactions and molecular genetics (Berg et al., 2022). Environmental chemistry, on the other hand, focuses on understanding and mitigating the impact of chemical contaminants on our planet's ecosystems (Manahan, 2018). Aspiring chemists pursuing a bachelor's degree in chemistry have the opportunity to explore these diverse areas of study. This educational journey provides them with the knowledge and skills needed to address complex scientific challenges, develop new materials, and contribute to advances in fields such as pharmaceuticals, materials science, and environmental conservation.

In summary, a bachelor's degree in chemistry offers a wide range of specialization options, allowing students to delve deeper into specific areas of chemistry that align with their interests and career aspirations. Whether it is the analytical precision of analytical chemistry, the theoretical insights of physical chemistry, or the complex world of biochemistry, the field of chemistry continues to evolve and provide exciting opportunities for those passionate about understanding and manipulating matter.

This book chapter aims to dispel the role that students attribute to organic chemistry. For them, organic chemistry is considered the most demanding subject of their career, the one that presents the greatest difficulty in obtaining good grades and the most demanding. They would have to go deeper into the field of organic chemistry and everything it encompasses. Organic chemistry is a branch of chemistry that delves into the intricate world of carbon compounds. It is a discipline that explores the fundamental components of life, discovering the remarkable diversity and complexity of organic molecules. This field of chemistry has a profound impact on various aspects of our lives, from the pharmaceuticals we take to the materials we use daily. The importance of organic chemistry lies in its ability to elucidate the structures, properties and reactions of carbon-based compounds. By understanding these principles, scientists can design and synthesize a wide range of

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