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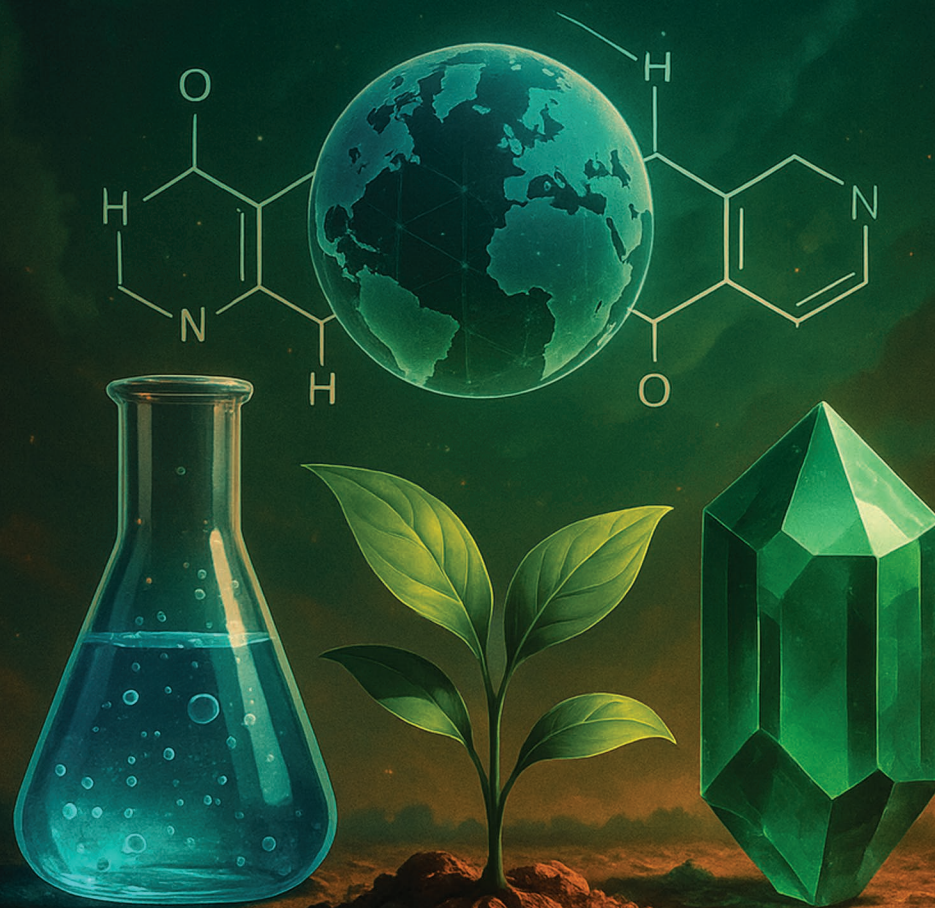
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# Perspectives of Medicinal, Material and Environmental Chemistry

PERSPECTIVES OF MEDICINAL, MATERIAL AND ENVIRONMENTAL CHEMISTRY



Editors:  
Dr. Saimah Khan  
Dr. Naseem Ahmad  
Dr. Firoz Hassan



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# **Perspectives of Medicinal, Material and Environmental Chemistry**

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# TABLE OF CONTENTS

| <b>Chapters</b>  | <b>Title</b>                                                                                                                                                                                          | <b>Page No.</b> |
|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| <b>Chapter 1</b> | Computational Studies of ( <i>E</i> )-Chalcone and ( <i>E</i> )-3-(2-Hydroxyphenyl)-1-Phenylprop-2-En-1-One and Their Metal Complexes<br><br><i>Aakash Verma, Mohammad Imran Ahmad, Tahmeena Khan</i> | <b>1-13</b>     |
| <b>Chapter 2</b> | The Study on Extraction Process and Analysis of Components in Black Pepper and White Pepper<br><br><i>Saimah Khan, Afifa Baig, Abdul Rahman Khan</i>                                                  | <b>14-32</b>    |
| <b>Chapter 3</b> | Green Synthesis of Iron Nanoparticles Supported on Biochar<br><br><i>Iqbal Azad, Hammnah Ali, Arshad Iqbal, Nafees Ahmad, Abdul Rahman Khan, Naseem Ahmad</i>                                         | <b>33-61</b>    |
| <b>Chapter 4</b> | Green Nanotechnology for Sustainable Development: Plant-Mediated Nanoparticle Synthesis and Applications<br><br><i>Mohd Arsh Khan, Qazi Inamur Rahman, Abdul Rahman Khan</i>                          | <b>62-81</b>    |
| <b>Chapter 5</b> | Synthesis, Characterization, Pharmacokinetics & Admet Studies of Schiff Bases<br><br><i>Ayesha Anwer, Mohammad Amir, Umme Habiba Malik, Malik Nasibullah</i>                                          | <b>82-98</b>    |
| <b>Chapter 6</b> | A Computational Study of Chalcone Derived Cu(II) And Zn(II) Complexes<br><br><i>Supreet, Tahmeena Khan, Mohammad Imran Ahmad</i>                                                                      | <b>99-118</b>   |

|                   |                                                                                                                 |                |
|-------------------|-----------------------------------------------------------------------------------------------------------------|----------------|
| <b>Chapter 7</b>  | Development of A Zinc-Based Metal-Organic Framework for Efficient Photocatalytic Degradation of Rhodamine B Dye | <b>119-129</b> |
|                   | <i>Naseem Ahmad, Lubna Tarique, Abhi, Neda Afreen, Nafees Ahmad</i>                                             |                |
| <b>Chapter 8</b>  | Isatin and Its Analogues as Promising Biological Agents                                                         | <b>130-152</b> |
|                   | <i>Mohd Arsh Khan, Ziaul Husain, Sabahat Yasmeen Sheikh, Firoj Hassan</i>                                       |                |
| <b>Chapter 9</b>  | An Introduction to The Synthesis of Biologically Active Chalcones                                               | <b>153-172</b> |
|                   | <i>Mohd Akil, Naseem Ahmad, Kajal Singh, Shruti Srivastava, Abdul Rahman Khan, Iqbal Azad</i>                   |                |
| <b>Chapter 10</b> | Gc-Ms Profiling and Antioxidant Activity of Musa Paradisiaca L. Peels Fractions                                 | <b>173-188</b> |
|                   | <i>Azeem Fatima, Mohd Arsh Khan, Shahzadi Bano, Abdul Rahman Khan, Jamal Akhtar Ansari</i>                      |                |

## CHAPTER – 9

### **An Introduction to the Synthesis of Biologically Active Chalcones**

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**Mohd Akil<sup>a</sup>, Naseem Ahmad<sup>a</sup>, Kajal Singh<sup>a</sup>, Shruti Srivastava<sup>a</sup>,  
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#### **Abstract**

Aldehydes and ketones are used in the aldol condensation reaction to develop carbon-carbon bonds, which effectively synthesises new compounds. The synthesis of chalcone derivatives is increasingly using this process. These derivatives are vital to natural product and drug production. This study highlights the importance and recent advances in aldol condensation-mediated chalcone derivative synthesis. An enolate ion from one of these substances' nucleophilically attacks an aldehyde or ketone's carbonyl group. If the aldol product undergoes further dehydration, it produces an unsaturated chalcone. Lewis's acids and bases such as amines, hydroxides, and alkoxides can catalyse the process. Aldol condensation-mediated chalcone derivative synthesis has improved with efficient, selective catalysts, substrate diversity, and reaction condition optimization. Additionally, novel reaction media improve reaction efficiency and environmental sustainability. These include ionic liquids and deep eutectic solvents. The aldol condensation reaction is versatile, making it straightforward to add functional groups and modify chalcone derivative structures. Because of these changes, it is now easier to synthesise various derivatives from chalcones that have better bioactivity and pharmacology. This chapter discusses different methods for the synthesis of chalcone derivatives.

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