

Research Methodology in Chemistry

Edited by
Fiona N.-F. How, Ph.D



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RESEARCH METHODOLOGY IN CHEMISTRY

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Table of content

Preface

Contributor

Reviewers

Chapter – 1: Research Methodology: An Introduction (6467/19269)	X
Chapter – 2: Good Chemistry Research (6467/19275)	6

Part One: Chemical Synthesis Based Research

Chapter – 1: Chemical Synthesis in General (5980/19279)	11
Chapter – 2: Design and Methodology (5980/19283)	17
Chapter – 3: Instrumentations for Chemical Analysis (5980/19290)	24
Chapter – 4: Separation and Purification Methods (5980/19293)	29

Part Two: Natural Products Based Research

Chapter – 1: Introduction (5641/19299)	37
Chapter – 2: Research in Natural Products (5641/19305)	40
Chapter – 3: Methods in Natural Products Research (5641/19308)	46
Chapter – 4: Bioactive Principle from Plants (5641/19311)	55
Chapter – 5: Biological Activity of Natural Products (5641/19489)	62
Chapter – 6: Standardization Process and Plant Metabolomics in Natural Products Research (5641/19490)	67

Part Three: Polymer Based Research

Chapter – 1: Natural Polymers (6312/19492)	73
Chapter – 2: Synthetic Polymers (6312/19494)	77
Chapter – 3: Polymer Analysis and Characterization (6312/19497)	86

Part Four: Analytical Based Research

Chapter – 1: Introduction (5678/19500)	92
Chapter – 2: Selecting a Research Topic and Writing a research proposal (5678/19502)	97

Chapter - 3: Sampling, measurement and result analyses (5678/19505) 105

Part Five: Laboratory Safety Practices

Chapter - 1: General Laboratory Safety Practices (5777/19507) ~~111~~

Chapter - 2: Personal Safety Equipment (5777/19511) ~~117~~

Chapter - 3: Laboratory Safety Equipment (5777/19515) 122

Chapter - 4: Laboratory Equipment Safety (5777/19516) 129

CHAPTER – 2

SYNTHETIC POLYMERS

Rosliza Binti Mohd. Salim

Thermoplastics: High Density Polyethylene (HDPE)

HDPE (Low Density Polyethylene) was made using very high pressure and temperature. HDPE is defined by a density of greater or equal to 0.941 g/cm^3 . These severe conditions lead to many short-chains branching, leading to low density polyethylene. On the other hand, polyethylene synthesized using low pressure method utilize Ziegler catalyst (AlEt_3 and TiCl_4) is mostly linear and thus yield high density polyethylene. The high density polyethylene has higher degree of crystallinity and rigidity than the low density polyethylene. Ziegler catalyst was accidentally discovered when Ziegler was examining the possibility of distilling metallo-organic molecule. The high density polyethylene is used for water pipe, gas pipe, and packaging.

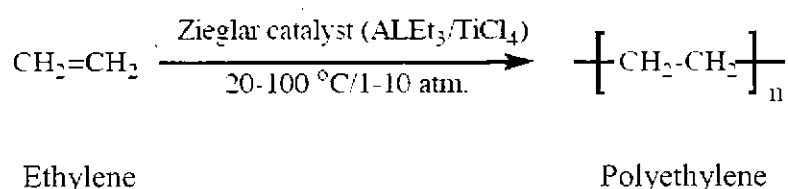


Figure 1.5: Production of polyethylene