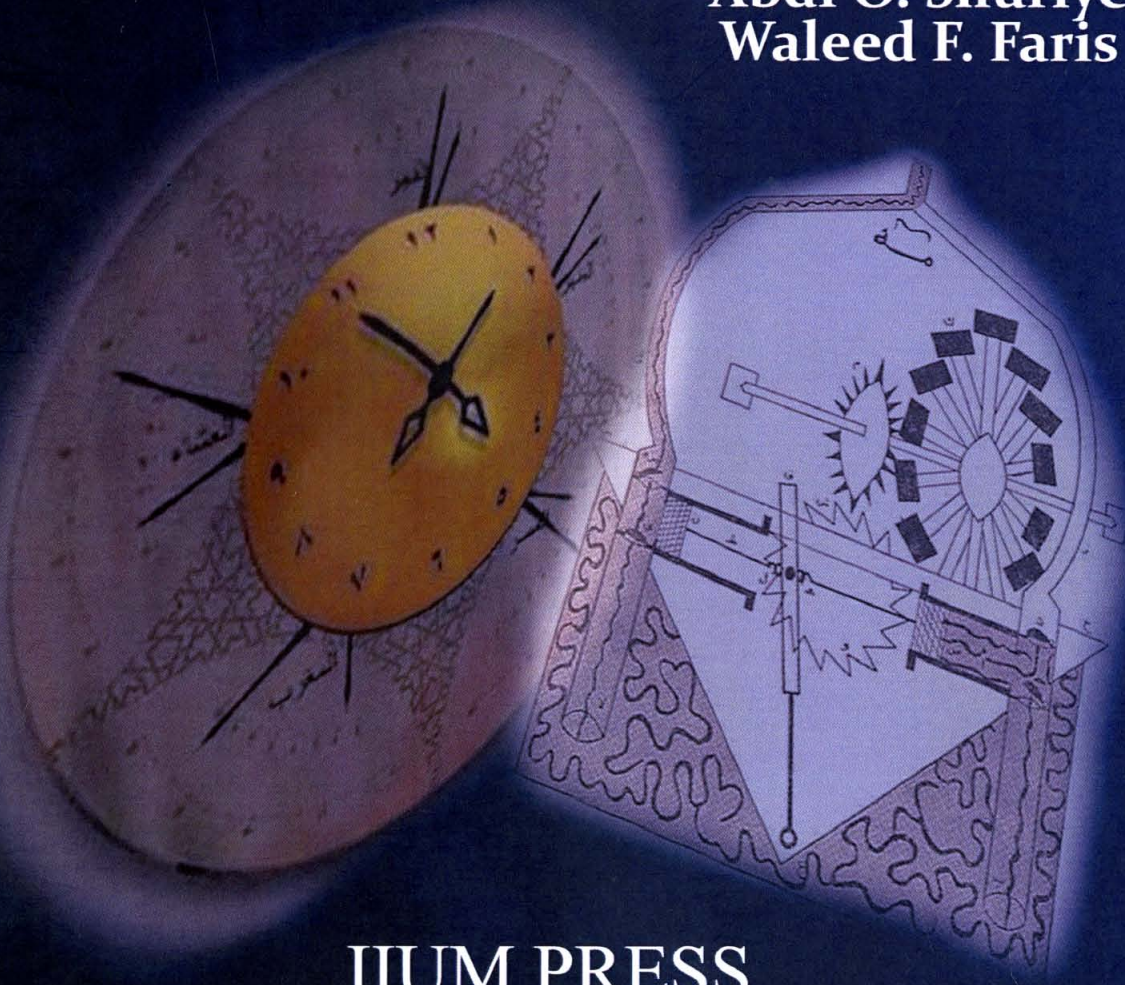


# Contributions of Early Muslim Scientists to Engineering Studies and Related Sciences

Abdi O. Shuriye  
Waleed F. Faris



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INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA



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## **Editors**

Abdi O. Shuriye  
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## Contents

<u>TITLE</u>	
Preface	v
Acknowledgment	vi
Lists of Contributors	vii
Introduction	1
Chapter 1 Al-Battani's Contribution to Astronomy	3
Chapter 2 Safiha by Al-Zarqali	8
Chapter 3 Ibn Al Shatir's Influence on Modern Astronomy	12
Chapter 4 Al-Zarqali on Instrumentation	19
Chapter 5 Contributions of Al-Razi on Alchemy in Terms of Metal and Substance	24
Chapter 6 Jabir Ibn Hayyan's Work on Sulphur-Mercury Theory	30
Chapter 7 The Contribution of Hassan Al-Rammah to Gunpowder and Rocket Technology	36
Chapter 8 The Contribution of Ibn Al-Awwam in Botany and Agriculture	41
Chapter 9 Al-Battani Contributions in Astronomy and Mathematics	45
Chapter 10 Al-Biruni's Views on the Discovery of the Spherical Earth	49
Chapter 11 Al-Kashi and Access to the Arithmetic & Astronomy	53
Chapter 12 Nasir Al-Din Al-Tusi's Understanding of Trigonometry	58
Chapter 13 Al-Biruni's Experimental Scientific Methods in Mechanics	65
Chapter 14 Al-Haytham's Understanding of Physical Nature of Light	70
Chapter 15 Contributions of Ibn Al-Haytham on Optics	74
Chapter 16 Energy Particle-Physics: The Efforts of Abdel Nasser Tawfik	80
Chapter 17 Mahmoud Hessaby's Contribution to the Infinitely Extended Particles Theory in Quantum Physics	86
Chapter 18 The Contribution of Ibn Ishaq Al-Kindi to Light, Optics and Cryptology	91
Chapter 19 The Contribution of Ibn Sahl in Refraction of Light	95
Chapter 20 Al Kindi on Pharmacology	103
Chapter 21 Contributions of Kerim Kerimov in Aerospace Engineering	110
Chapter 22 Fazlur Rahman Khan's Understanding of Tube Structural System of Skyscrapers	115

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Chapter 23	Contribution of Lofti Asker Zadeh to Fuzzy Logic	121
Chapter 24	The Nano World of Munir Nahfey	127
Chapter 25	Abbas Ibn Firnas's Contribution in Aviation	135
Chapter 26	Al- Jazari Contribution to the Development of Water Supply System	139
Chapter 27	Contribution of Tipu Sultan to Rocket Technology	143
Chapter 28	The Contributions of Al - Khazini in the Development of Hydrostatic Balance and its Functionality	147
Chapter 29	The Contribution of Banu Musa Brothers in the Self Changing Fountain	155
Chapter 30	The Invention of the Helium-Neon Gas Laser by Ali Javan	160
Chapter 31	Al-Jazari on Automata	165

## **CHAPTER EIGHTEEN**

### **THE CONTRIBUTION OF IBN ISHAQ AL-KINDI TO LIGHT, OPTICS AND CRYPTOLOGY**

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#### **18.1 INTRODUCTION**

The objective of this chapter is to discuss Al Kindi's contributions in the field of engineering including the theory of light, optics and cryptology. The research framework is Al Kindi's contributions to light including act of seeing, motion of rectilinear property of light, visual rays and perception.

#### **18.2 LIGHT**

##### **18.2.1 Act of Seeing**

During the Greek era, Euclid started a tradition which was followed by Ptolemy whereby geometrical constructions were actually used to explain things such as visual perspective, shadows, refraction, reflection and burning mirror. This tradition was adopted by al kindi as well. This method meant that light and vision can be visualized in straight lines. From this observation, al kindi observes the reason why humans are able to see is because the rays from eyes along straight lines strike a visual object. Furthermore Al kindi during his life time came across two theorems; one from Aristotle and another from Euclid. In Aristotle perspective, for the eyes to see an object, both the eye and object must be in a contact with a transparent medium fill with light. But Euclid on the other hand believes that people can see because rays from eye hit object that are illuminated. Al kindi analyzed both theories from practical aspects such as viewing circle, shadow and reflections on mirror. He comes to the conclusion that Euclid was correct on his beliefs (Peter, 2006).

##### **18.2.2 Motion of Rectilinear Property of Light**

Al kindi used geometrical methods and experimented with shadows of opaque and lights passing through slit to find motion of rectilinear property of lights. He (Jean, Roshdi, 2008).