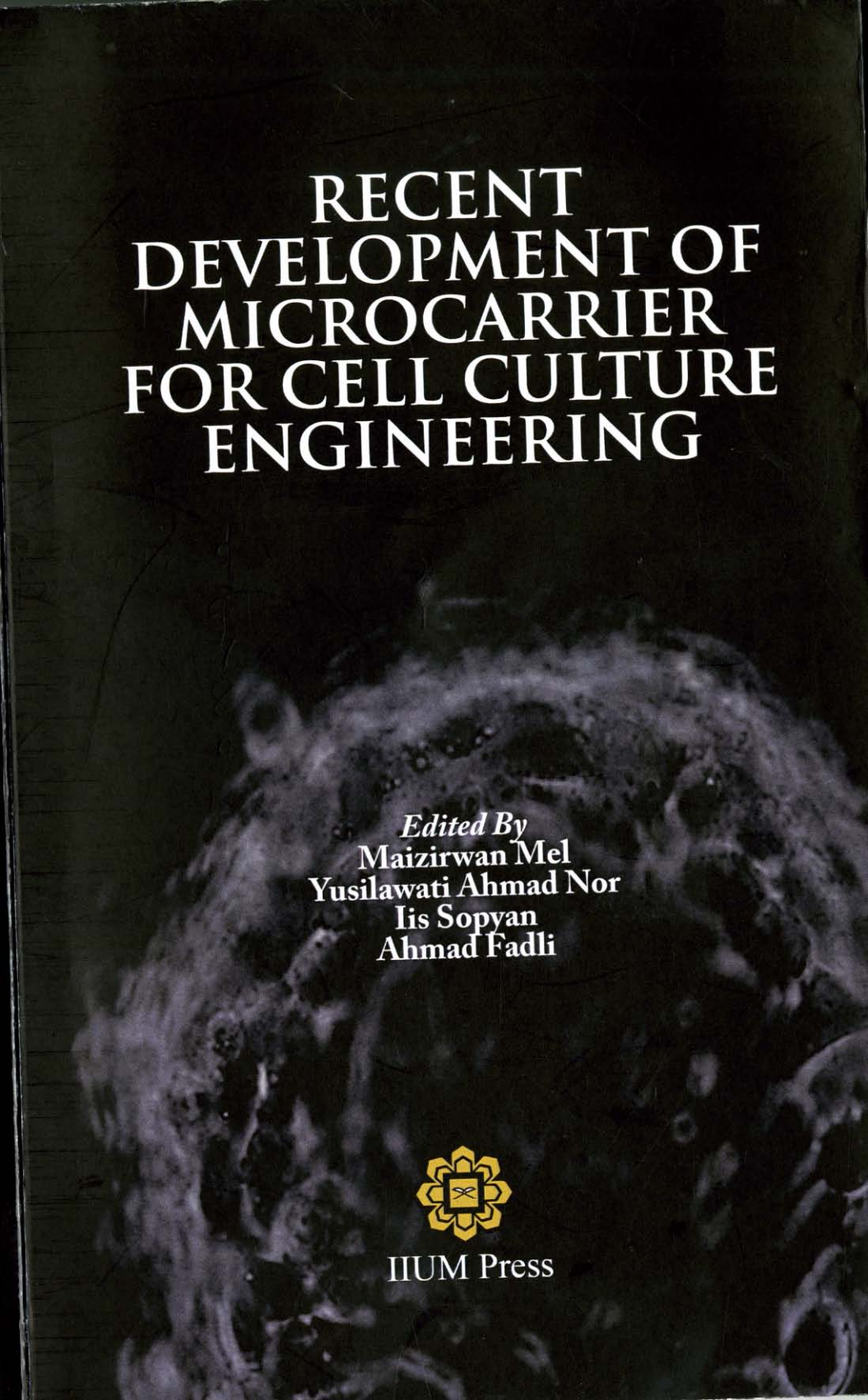
RECENT DEVELOPMENT OF MICROCARRIER FOR CELL CULTURE ENGINEERING



Edited By
Maizirwan Mel
Yusilawati Ahmad Nor
Iis Sopyan
Ahmad Fadli

IIUM Press

Published by:
IIUM Press
International Islamic University Malaysia

First Edition, 2011

Perpustakaan Negara Malaysia Cataloguing-in-Publication Data

Recent Development Of Microcarrier For Cell Culture Engineering
Maizirwan Mel
Include Index

ISBN 978-967-418-009-6

Member of Majlis Penerbitan Ilmiah Malaysia - MAPIM
(Malaysian Scholarly Publishing Council)

Printed by:
IIUM PRINTING SDN. BHD.
No. 1, Jalan Industri Batu Caves 1/3,
Taman Perindustrian Batu Caves,
Batu Caves Centre Point,
68100 Batu Caves,
Selangor Darul Ehsan

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Chapter 13

Cell Attachment Study of Chicken Fibroblast Cell (DF1) Using Ceramic Microcarrier Granule in Bioreactors

Maizirwan Mel, Iis Sopyan, Yusilawati Ahmad Nor

1. Introduction

The adhesion of cells to culture surfaces is fundamental to both traditional monolayer culture techniques and to microcarrier culture. Since the proliferation of anchorage-dependent cells can be only occurred after adhesion to a suitable culture surface (Grinnell, 1997), it is important to use surfaces and culture procedures that enhance all of the steps involved in adhesion. Adhesion of cells in culture is a multistep process involved; absorption of attachment factors to the culture surface, contact between the cells and the surface, attachment of the cells to the coated surface and lastly the spreading of the attached cells where cell proliferated (Mukhopadhyay, 1993).

Microcarriers have many advantages. They are essential when surfaces are needed for anchorage dependent cells. Microcarrier technology results in a homogeneous culture system that is truly scalable. Furthermore, they have large surface area to volume ratio, which occupy less space in storage, production and waste-handling. The surface also allows cells to secrete and deposit an extracellular matrix,