



UNIVERSITI
TEKNOLOGI
MARA

PERSONALISED THERAPY

The Perspective of Pharmaceutical Technology



WONG TIN WUI

Professorial
Lecture

UiTM

PERSONALISED THERAPY

The Perspective of Pharmaceutical Technology

Wong Tin Wui

PENERBIT  **PRESS**
UNIVERSITI TEKNOLOGI MARA

© UiTM Press, UiTM 2022

All rights reserved. No part of this publication may be reproduced, copied, stored in any retrieval system or transmitted in any form or by any means; electronic, mechanical, photocopying, recording or otherwise; without prior permission in writing from the Director of UiTM Press, Universiti Teknologi MARA, 40450 Shah Alam, Selangor Darul Ehsan, Malaysia.

E-mail: penerbit@uitm.edu.my

UiTM Press is a member of
MALAYSIAN SCHOLARLY PUBLISHING COUNCIL

Perpustakaan Negara Malaysia Cataloguing-in-Publication Data

978-967-363-865-9

Cover Design : Siti Suhaini Mazlan

Typesetting : Mohd Fadhel Mohd Drus

Printed in Malaysia by : UiTM Printing Centre
College of Creative Arts Studies
Universiti Teknologi MARA
40450 Shah Alam
Selangor

CONTENTS

Preface

vii

Personalised Therapy - The Perspective of Pharmaceutical Technology

- Perspective of Pharmaceutical Technology in Personalised Therapy 1
- Research and Development Direction 2
- Microwave as Skin Penetration Enhancer 4
 - Cutaneous Melanoma 8
 - Diabetes 19
- Multi-Particulate Drug Delivery System 25
 - Innovative Processing Technology 30
 - Gastric- and Intestinal-Specific Drug Delivery System 32
 - Colon-Specific Drug Delivery System 33
 - Alginate Carrier 39
 - Inhaled Particulate System 42
- Dome Matrix Technology 46
- The Next Step 49
- Collection of Studies for the Preparation of Precision Health Research 49
- Sustainable Development Goals 59

PREFACE

The book is written in conjunction with professorial lecture 2022 to be held in Universiti Teknologi MARA, Malaysia. It aims to summarize my research progress in the arena of pharmaceuticals and biopharmaceuticals. Looking through the past research studies, my research focus first begins with particle design where physics and chemistry are topics of concern in the mechanistic elucidation of the development of a delivery system. Much efforts are devoted in oral drug delivery system design from the perspectives of innovative material/formulation sciences and processing technology dealing with small molecule drugs. In 2006, the research focus gears toward diabetes and oral insulin delivery. The study integrates physics, chemistry and biology elements in a single attempt, and macromolecular therapeutic is employed as the drug of interest for the first time. In 2008 and thereafter, I venture into skin and pulmonary drug delivery. Synthetic chemistry and microwave physics become the main lead in new science creation. Through extensive international and national collaborations, my team and myself are now heading in the direction of new particle designs involving fundamental understanding from the roots of molecular biology and molecular pharmaceuticals.

Many outstanding collaborators, partners and teachers whom I must express my heart-felt gratitude for, over these 25 years of academic journey, are: