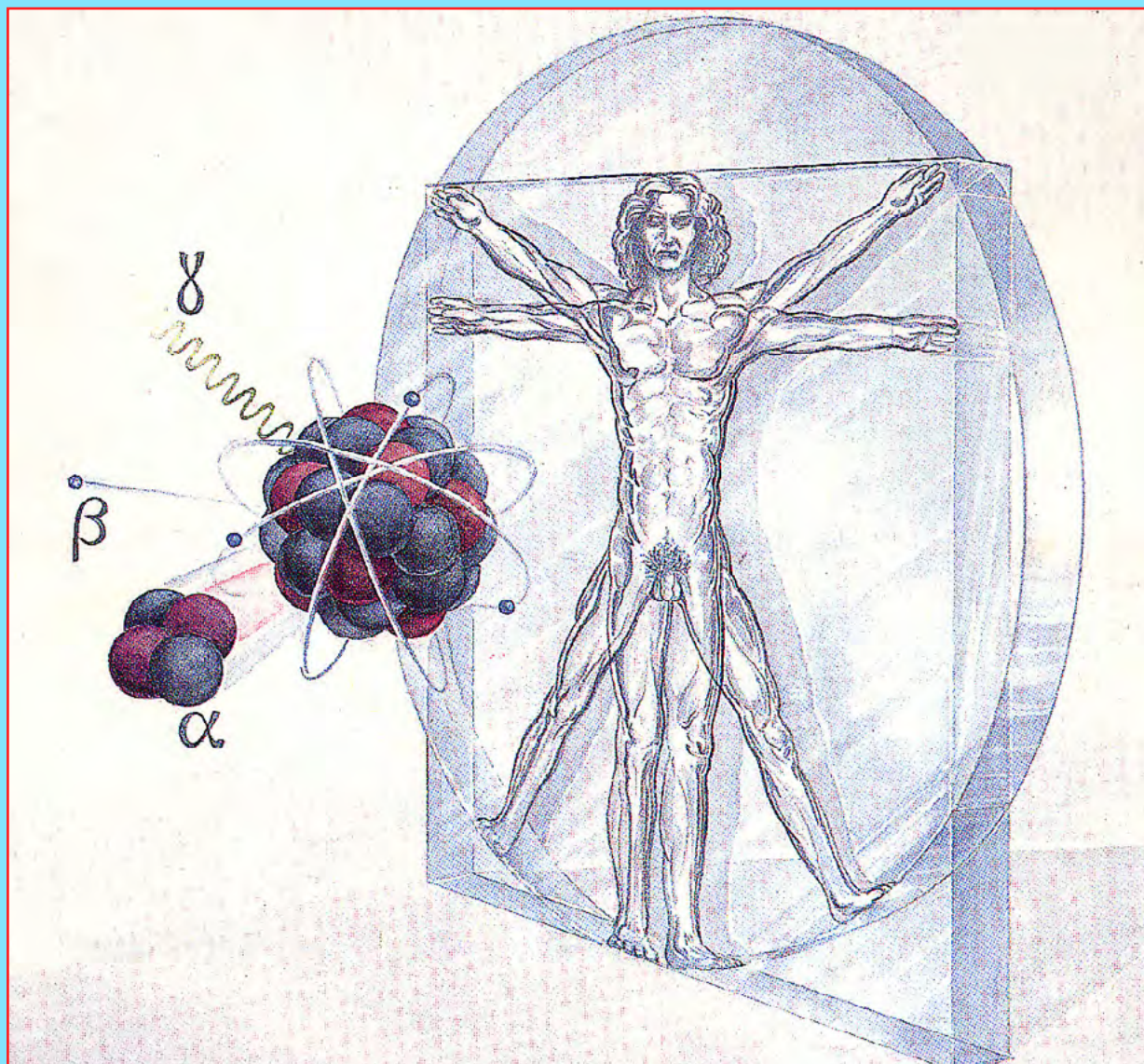


Radiation and Health

by
Thormod Henriksen
and
Biophysics group at UiO



Preface

The present book is an update and extension of three previous books from groups of scientists at the University of Oslo. The books are:

I. Radioaktivitet – Stråling – Helse

Written by; Thormod Henriksen, Finn Ingebretsen, Anders Storruste and Erling Stranden.

Universitetsforlaget AS 1987

ISBN 82-00-03339-2

I would like to thank my coauthors for all discussions and for all the data used in this book. The book was released only a few months after the Chernobyl accident.



II. Stråling og Helse

Written by Thormod Henriksen, Finn Ingebretsen, Anders Storruste, Terje Strand, Tove Svendby and Per Wethe.

Institute of Physics, University of Oslo 1993 and 1995

ISBN 82-992073-2-0

This book was an update of the book above. It has been used in several courses at The University of Oslo. Furthermore, the book was again updated in 1998 and published on the Internet.

The address is: <http://www.mn.uio.no/fysikk/tjenester/kunnskap/straling/>



III. Radiation and Health

Written by Thormod Henriksen and H. David Maillie

Taylor & Francis 2003

ISBN 0-415-27162-2

This English written book was mainly a translation from the books above. I would like to take this opportunity to thank David for all help with the translation.

The three books concentrated to a large extent on the basic properties of ionizing radiation. Efforts were made to describe the background radiation as well as the release of radioactivity from reactor accidents and fallout from nuclear explosions in the atmosphere. These subjects were of high interest in the aftermath of the Chernobyl accident.

During the later years a large amount of research and interesting new results within radiobiology have emerged. The purpose of the present book is therefore to include some interesting applications of radiation in medicine, as well as to present some of the exciting new discoveries in radiobiology.

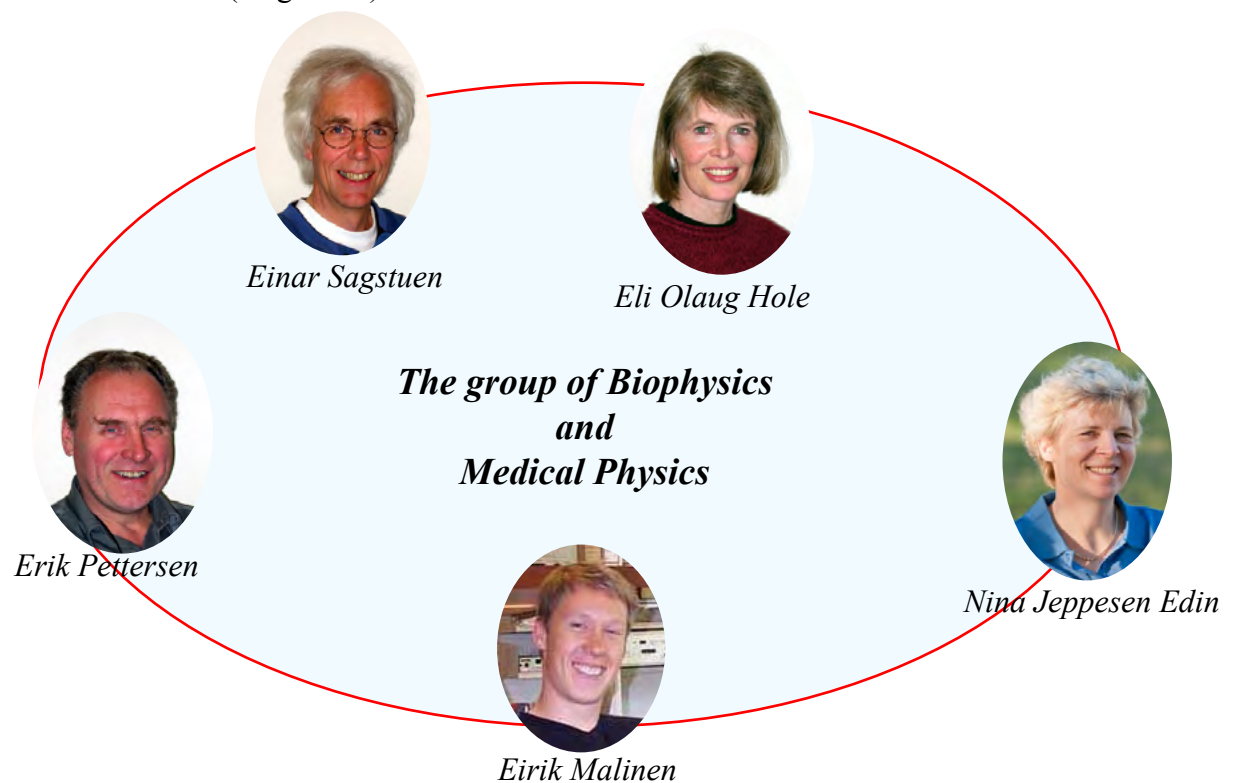
In this update the basic radiation physics and radiobiology are included. Furthermore, some applications of radiation in medicine will be highlighted.



It would be impossible to embark on this project unless heavy support from my active colleagues at the “group of Biophysics and Medical physics” at The University of Oslo. The group is engaged in research with the aim to attain information about the physical processes taking place in cells and tissue when irradiated. This include the formation of radicals and how they lead to the known biological endpoints. The group members (professors Eli Olaug Hole and Einar Sagstuen) are using magnetic resonance (ESR) to study radical formation, secondary processes and fate.

Other members of the group (professor Erik Pettersen) are using mammalian cells in culture. The interests are the control mechanisms working in the cell cycle. Of particular interest is the effect of small radiation doses, given at a low dose rate. These studies are of importance for environmental problems as well as within cancer treatment.

The group have close cooperations with professor Eirik Malinen (radiation therapy) and associate professor Hilde Olerud (diagnostic).



I take this opportunity to thank all my coworkers with the previous books as well as the members of the biophysics group with the present book, which is free to everybody here on Internet.

In order to discuss some results and models I have used illustrations published on Internet without further permission.

University of Oslo, 2009
Updated 2013

Thormod Henriksen



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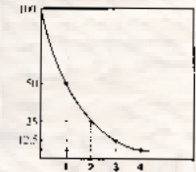
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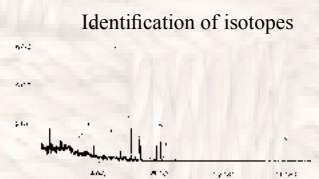
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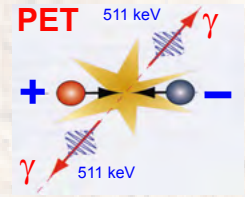
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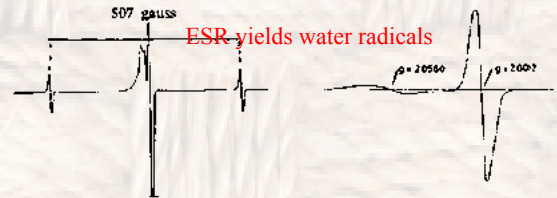
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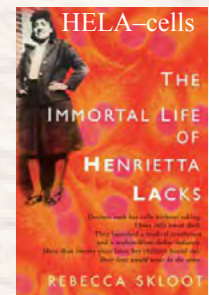


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