

Contents

Preface: Converging technologies from the nanoscale require enhanced ethics — VII

Forewords — XI

Acknowledgments — XVII

Introduction: Overall vision of ethics in nanotechnology developments — XXIII

Embedding ethics in nanomedicine: Europe acted promptly — XXIX

List of contributing authors — XXXIX

About the editors — XLIII

Part I: International reflection

Bengt Fadeel and Phil Sayre

- 1 Toward a revitalized vision of ethics and safety for the revolutionary nanotechnologies — 3**

Part II: Nanotechnology expansions raising ethical concerns

Nidhi Gupta

- 2 Nanotechnology in agrifood sector: Ethical, regulatory, and governance landscape in EU — 25**

Mahouton Norbert Hounkonnou

- 3 Defining nanoscience and nano-ethics: why does the future need nanoproducts? — 59**

Robert Albin and Amos Bardea

- 4 Streaching the notion of moral responsibility in nanoelectronics applying AI — 75**

Khara Grieger, Panagiotis Isigonis, Remy Franken, Henning Wigger, Nathan Bossa, Gemma Janer, Taylor Rycroft, Alan J. Kennedy and Steffen Foss Hansen

5 Risk screening tools for engineered nanomaterials — 89

Soraj Hongladarom

6 Nano-ethics: A view from a developing country — 109

Part III: Nanotechnology philosophy: Dilemmas and ethical issues

Albert Ed. Evrard and Praveen Martis

7 Christian thinking and acting in nanotechnologies: Reflection based on the principles and values of the Social Teaching of the Church based on apps concerning old people — 121

Leszek A. Dobrzański, Lech B. Dobrzański, Anna D. Dobrzańska-Danikiewicz, Joanna Dobrzańska and Marzena Kraszewska

8 Ethical imperatives towards the development prospects of the triad of Dentistry 4.0, dental engineering, and nanoengineering — 157

Hans Leuenberger

9 Debate: Nanoparticles – a blessing or a curse? — 249

Natalia L. Pacioni

10 The broad spectrum of ethics in nanoscience and nanotechnology: A reflection from scientific research to the media — 269

Part IV: Ethical recommendations for promising technology

Geert van Calster

11 From big statements to anecdotal and incremental regulation: Nanotechnology and the law in the EU — 281

Ilise L Feitshans

12 Emerging nanoregulations: zapping the mythical absence of nanotechnology law — 297

Alberto García Gómez and Giulia Bovassi

- 13 Contemporary global bioethical challenges of innovation in nanoscience and nanotechnologies. Contributing to the Sustainable Development Goals — 311**

Michael Stuckelberger and Christoph Stückelberger

- 14 Nanotechnology and ethics in dialogue — 325**

Rune Nydal

- 15 Revitalizing nano-ethics: Nanotechnology at the center of nano-ethics — 337**

Ilise L. Feitshans

- 16 Reflections on nano-ethics the way forward toward equitable and safe nanotechnology for all — 349**

Marcel Van de Voorde and Gunjan Jeswani

- Conclusion — 355**

- Index — 359**