ISO/TR 23652:2024-06 (E)

Nanotechnologies - Considerations for radioisotope labelling methods of nanomaterials for performance evaluation

Contents

Page

Foreword ... **iv**

Introduction ... **v**

1 Scope ... **1**

2 Normative references ... **1**

3 Terms and definitions ... **1**

4 Abbreviated terms ... **2**

5 Biodistribution study and radioisotopes ... **3**
5.1 Biodistribution study ... 3
5.2 Radioisotopes ... 3

6 Radioisotope labelling methods for nanomaterials ... **4**
6.1 General ... 4
6.2 Pre- and post-surface labelling method ... 6
6.3 Chelating agent-based labelling ... 6
6.4 Chelating agent-free radioisotope labelling method ... 8
6.4.1 General ... 8
6.4.2 Radioactive-plus-non-radioactive precursors ... 8
6.4.3 Specific trapping ... 8
6.4.4 Cation exchange ... 9
6.4.5 Neutron or proton beam activation ... 10
6.5 Dual radioisotope labelling ... 10
6.6 Choice of radioisotopes ... 11
6.7 Production of radioisotopes ... 11
6.7.1 General ... 11
6.7.2 Cyclotron-produced radioisotopes ... 12
6.7.3 Reactor-produced radioisotopes ... 12
6.7.4 Generator-produced radioisotopes ... 13
6.8 Chelating agent and the matched pair for radioisotope ... 13

7 The stability of radioisotope-labelled nanomaterials ... **14**

8 Advantages and disadvantages of radioisotope labelling method ... **15**

Annex A (informative) **Representative radioisotopes used for nanomaterial labelling** ... **16**

Annex B (informative) **Advantages and disadvantages of radioisotope labelling methods for nanomaterials** ... **17**

Bibliography ... **18**