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## **Nanotechnologies — Framework for identifying vocabulary development for nanotechnology applications in human healthcare**

*Nanotechnologies — Cadre pour le développement d'un vocabulaire  
d'identification des applications de nanotechnologies en santé humaine*



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## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: [Foreword - Supplementary information](#)

The committee responsible for this document is ISO/TC 229, *Nanotechnologies*.

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## Introduction

Terminology related to the use of nanotechnologies in human healthcare is on the rise as research in the field continues to intensify. The heightened focus in medical research on nanotechnologies is reflected by the number of medical and related scientific journals that are reporting on this research. The number of publications mentioning both nanotechnology and biology or medicine has increased logarithmically since approximately the year 2000.<sup>[1]</sup>

This Technical Report explains current concepts related to human healthcare in the clinical setting and identifies pertinent and timely categories most likely to be advanced by nanotechnologies. Certain aspects of human healthcare are expected to be advanced by nanotechnologies more than others, and standardization needs unique vocabulary to support the development of applications of nanotechnologies within it. It is recognized, for example, that physical chemists use the term “substrate” to describe a material surface supporting adsorption processes; this differs from a biologist’s use of the term “substrate” to describe a substance that an enzyme acts upon.

Due to the keen public interest in the advancement of human healthcare, a common vocabulary is particularly relevant to the development of research proposals to gain funding and to communicate findings and results. This Technical Report provides a taxonomic framework to serve as the basis for the development of terminology related to the application of nanotechnologies in human healthcare. The framework identifies categories associated with the clinical value chain most likely to be advanced by nanotechnologies and describes some of the promising technologies being developed and utilized within the clinical workflow. It is intended that terms will be identified and harmonized definitions will be developed for them within the framework offered by this Technical Report.