

# ISO/TR 22455:2021-11 (E)

## Nanotechnologies - High throughput screening method for nanoparticles toxicity using 3D model cells

---

<b>Contents</b>		<b>Page</b>
Foreword .....		iv
Introduction .....		v
1	<b>Scope</b> .....	1
2	<b>Normative references</b> .....	1
3	<b>Terms and definitions</b> .....	1
4	<b>Background</b> .....	2
4.1	General .....	2
4.2	Effects of optical properties of NPs on in vitro cell viability assays .....	2
4.3	New assay platform for in vitro toxicity screening of NPs diminishing optical interference .....	4
4.4	Characteristics of 3D model cells .....	7
4.5	Cell viability in response to NPs assessed using 3D model cells on a pillar insert .....	9
4.6	Cellular uptake of NPs using 3D model cells on a pillar insert .....	13
4.7	Discussion of alternative strategies to evaluate in vitro toxicity testing of NPs .....	16
5	<b>Methods for cell viability screening of NPs using 3D-model cells</b> .....	17
5.1	General .....	17
5.2	Cell culture .....	17
5.3	Preparation of the pillar insert for in vitro screening .....	17
5.4	Encapsulation of cells on a micropillar chip to generate 3D-model cells .....	18
5.5	NPs sample preparation .....	18
5.6	Exposing 3D-model cells to NPs .....	18
5.7	Cell viability analysis using a WST assay .....	19
5.8	Cell viability analysis using live-cell imaging .....	19
Bibliography .....		21