

# ISO 13099-2:2025-08 (E)

## Colloidal systems - Methods for zeta-potential determination - Part 2: Optical methods

---

<b>Contents</b>		<b>Page</b>
Foreword .....		iv
Introduction .....		v
1	Scope .....	1
2	Normative references .....	1
3	Terms, definitions and symbols .....	1
3.1	Terms and definitions .....	1
3.2	Symbols .....	3
4	Principles .....	3
5	Microscopic methods .....	4
6	Electrophoretic light-scattering (ELS) method .....	5
6.1	General .....	5
6.2	Cell design .....	5
6.3	Reference beam optical arrangement .....	6
6.4	Signal processing .....	8
6.4.1	Spectrum analysis .....	8
6.4.2	Autocorrelation function .....	8
6.4.3	Phase analysis light scattering (PALS) .....	9
6.4.4	Modulated Brownian motion power spectrum method .....	9
6.5	Determination of electrophoretic mobility .....	10
7	Calculation of zeta-potential .....	10
8	Operational procedures .....	11
8.1	Requirements .....	11
8.1.1	Instrument location .....	11
8.1.2	Dispersion liquids .....	11
8.1.3	Measurement cell .....	11
8.1.4	Sample inspection, preparation, dilution, and concentration .....	12
8.2	Verification .....	13
8.2.1	Reference materials .....	13
8.2.2	Repeatability .....	13
8.2.3	Intermediate precision .....	13
8.2.4	Trueness .....	13
8.3	Sources of measurement error .....	14
8.3.1	Contamination of the current sample by the previous sample .....	14
8.3.2	Inappropriate sample preparation procedure .....	14
8.3.3	Inappropriate sample .....	14
8.3.4	Inappropriate liquid medium .....	14
8.3.5	Poor temperature stabilization .....	14
8.3.6	Condensation on the illuminated surfaces .....	14
8.3.7	Particles, fingerprints or scratches on the optical surfaces .....	14
8.3.8	Too large a potential applied .....	15
8.3.9	Incorrect entry of parameters by the operator .....	15
8.3.10	Air bubbles .....	15

8.3.11	Cell coating damage .....	15
8.3.12	Calculating zeta-potential .....	15
8.3.13	Sample stability consideration .....	15
8.4	Test report .....	15
Annex A (informative) Electroosmosis within capillary cells .....		17
Bibliography .....		20