INTERNATIONAL STANDARD

ISO 13099-2

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Colloidal systems — Methods for zeta-potential determination —

Part 2: Optical methods

Systèmes colloïdaux — Méthodes de détermination du potentiel zêta —

Partie 2: Méthodes optiques

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Contents

Page

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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 13099 was prepared by Technical Committee ISO/TC 24, *Particle characterization including sieving*, Subcommittee SC 4, *Particle characterization*.

ISO 13099 consists of the following parts, under the general title *Colloidal systems — Methods for zeta-potential determination*:

— *Part 1: Electroacoustic and electrokinetic phenomena*

— *Part 2: Optical methods*

The following part is under preparation

— *Part 3: Acoustic methods*

Introduction

Zeta-potential is a parameter that can be used to predict the long term stability of suspensions and emulsions and to study surface morphology and adsorption on particles and other surfaces in contact with a liquid. Zeta-potential is not a directly measurable parameter. It can be determined using appropriate theoretical models from experimentally determined parameters, such as electrophoretic mobility. Optical methods, especially electrophoretic light scattering, have been widely used to determine electrophoretic mobility of particles or macromolecules in suspension or in solution. The purpose of this part of ISO 13099 is to provide methods for measuring electrophoretic mobility using optical means and for calculating zeta-potential.

Colloidal systems — Methods for zeta-potential determination —

Part 2: Optical methods

IMPORTANT — This part of ISO 13099 shall be read in conjunction with ISO 13099-1, which gives a comprehensive overview of the theory.

1 Scope

This part of ISO 13099 specifies two methods of measurement of electrophoretic mobility of particles suspended in a liquid: video microscopy and electrophoretic light-scattering. Estimation of surface charge and determination of zeta-potential can be achieved from measured electrophoretic mobility using proper theoretical models, which are described in detail in ISO 13099-1.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 13099-1, *Colloidal systems — Methods for zeta-potential determination — Part 1: Electroacoustic and electrokinetic phenomena*

ISO Guide 30: *Terms and definitions used in connection with reference materials*

3 Terms, definitions and symbols

3.1 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1.1
Brownian motion
random movement of particles suspended in a liquid cause by thermal movement of medium molecules

3.1.2
Doppler shift
change in frequency and wavelength of a wave for an observer moving relative to the source of the wave

3.1.3
electric surface potential
difference in electric potential between the surface and the bulk liquid

NOTE Electric surface potential is expressed in volts.