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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 42843.1-2023

**Fine bubble technology - Sampling and sample preparation for
measurement - Part 1: Ultrafine bubble dispersion in water**

微细气泡技术 测量取样及样品制备 第1部分：超细气泡水分散体系

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Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part

1. Structure and Drafting Rules of Standardization Documents" Drafting. This document is Part 1 of GB/T 42843 "Sampling and Sample Preparation for Measurement by Fine Bubble Technology". GB/T 42843 has been issued. The following parts have been published.

1. Ultrafine bubble water dispersion system. This document has been modified to adopt ISO 20298-1.2018 "Fine bubble technology measurement sampling and sample preparation Part

1. Ultra-fine bubble water" Decentralized System". The technical differences between this document and ISO 20298-1.2018 and their reasons are as follows:

---Replaced ISO 20480-1 (see Chapter 3) with normatively cited GB/T 41914.1 to adapt to my country's technical conditions and improve High operability. The following editorial changes have been made to this document.

---Replaced ISO 123 with the informative reference GB/T 8290;

---Replaced ISO 21255 with the informative reference GB/T 42844;

---Added the measurement principle used by measuring instruments (see B.2). Please note that some content in this document may be subject to patents. The publisher of this document assumes no responsibility for identifying patents. This document is proposed by the Chinese Academy of Sciences. This document is under the jurisdiction of the National

Technical Committee on Standardization of Fine Bubble Technology (SAC/TC584). This document was drafted by: Institute of Process Engineering, Chinese Academy of Sciences, Northeast Normal University, Ningbo Haibo Group Co., Ltd., National Nanotechnology Science Center, Changzhou University, Tongji University, Shanghai Institutes for Advanced Study, Chinese Academy of Sciences, and Yuchuang Environmental Technology (Jinan) Co., Ltd. The main drafters of this document. Li Zhaojun, Fan Wei, Xia Shaohua, Zhou Lan, Chen Lan, Feng Sheng, Li Pan, Zhang Lijuan, Li Jixiang, Huo Yang, Si Guangzhen.

Micro-bubble technology can enhance processes or applications in cleaning, chemical, aquaculture and agricultural fields. Characterization of ultrafine bubbles is crucial for further development of industrial applications. Some characteristic parameters (such as bubble size, bubble number are stable properties, bubble number concentration and other physical and chemical characteristics) are very important in applications. To provide verifiable characterization platforms for these applications Taiwan, this document specifies a set of ultrafine sparkling water sampling and sample preparation methods. This method makes it easy to disperse fine bubbles Characterization performs reliable correlation analysis and predictive analysis of possible application effects. In general, the sample preparation technique depends on the characterization technique used. "Fine Bubble Technology Measurement Sampling and Sample Preparation" aims to standardize micro bubble measurement sampling and sample preparation. It is currently published by Made up of one part.

1.Ultrafine bubble water dispersion system. The purpose is to establish the sampling and preparation method of ultrafine bubble water dispersion system. Microbubble technology measurement sampling and sample preparation Part

1 Scope

GB/T 42843.1-2023 is Part 1 of the Chinese series on sampling and sample preparation for fine bubble measurement, and covers ultrafine bubble dispersions in water. Ultrafine bubbles are below a micrometre, they do not rise, and they can persist for weeks - which is what makes them useful and what makes them nearly impossible to sample honestly: the concentration is high enough that any instrument must dilute the sample, and the dilution water, the glassware and the act of pouring all introduce or destroy bubbles. The standard sets the general provisions, the instruments and their cleaning, the sampling steps, the sample preparation and the data record, with informative annexes on the homogenisation method and on the dilution steps with worked record examples. It took effect on 1 March 2024.

This document describes the sampling and sample preparation steps and conditions for ultrafine bubble water dispersions. This document applies to relatively stable dispersion systems, that is, the number and size of bubbles are relatively stable during sampling, sample preparation and testing. This document does not apply to unstable fine bubble

dispersion systems or microbubble dispersion systems.

2 Normative reference documents

The contents of the following documents constitute essential provisions of this document through normative references in the text. Among them, the dated quotations For undated referenced documents, only the version corresponding to that date applies to this document; for undated referenced documents, the latest version (including all amendments) applies to this document.

GB/T 41914.1 Microbubble Technology General Principles for the Use and Measurement of Microbubbles Part

3 Terms and definitions

The terms and definitions defined in GB/T 41914.1 and the following apply to this document.

3.1 A liquid containing fine air bubbles.

3.2 diluent waterdiluent Used for dilution, homogeneous water without any negative effects and with a known number and concentration of ultra-fine bubbles. Note

1.Dilution water is used to reduce the number and concentration of ultrafine bubbles in the dispersion system, and does not change the total number of ultrafine bubbles and the particle aggregation state, size or surface academic nature. Note

2.When evaluating ultrafine bubbles, dilution water with a concentration of zero ultrafine bubbles is called blank water.

3.3 A liquid containing ultrafine bubbles.

3.4 A liquid containing microbubbles.

4 Liquids for sampling and sample preparation

The liquid used for sampling and sample preparation should be an ultrafine bubble dispersion system, and during the sampling, sample preparation and measurement processes, the size of the ultrafine bubbles should be size and number concentration values, as well as other characteristics.