

# ISO/TS 22933:2022-04 (E)

## Surface chemical analysis - Secondary ion mass spectrometry - Method for the measurement of mass resolution in SIMS

---

| <b>Contents</b>       |   | <b>Page</b> |
|-----------------------|---|-------------|
| Foreword .....        |   | iv          |
| Introduction .....    |   | v           |
| 1                     | Scope .....   | 1           |
| 2                     | Normative references .....  | 1           |
| 3                     | Terms and definitions .....   | 1           |
| 4                     | Symbols and abbreviated terms .....   | 2           |
| 5                     | Definitions of mass resolution based on peak separation of two mass peaks .....                             | 2           |
| 5.1                   | General .....   | 2           |
| 5.2                   | X% valley .....   | 2           |
| 5.3                   | X% peak width M (X%) or R (X%) = $M/M(X\%)$ .....   | 3           |
| 5.4                   | X% peak tail interference .....   | 4           |
| 5.5                   | Summary .....   | 4           |
| 6                     | Procedure to determine the mass resolution .....  | 5           |
| 6.1                   | General .....   | 5           |
| 6.2                   | Removing contamination on sample surface .....  | 5           |
| 6.3                   | Obtaining spectrum peak .....   | 5           |
| 6.4                   | Determination of mass resolution .....  | 5           |
| 7                     | Mass resolution comparison between different type of SIMS .....   | 5           |
| 7.1                   | Mass resolution comparison between M-SIMS and TOF-SIMS .....  | 5           |
| 7.2                   | Mass resolution comparison between TOF-SIMS and FTICR-SIMS .....  | 7           |
| 7.3                   | Mass resolution of flat top mass peak .....   | 8           |
| 8                     | Conclusion .....  | 9           |
| Annex A (informative) | Examples of mass resolution measured by Q-SIMS, TOF-SIMS, Magnetic-SIMS, Orbitrap-SIMS and FTICR-SIMS ..... | 10          |
| Bibliography .....    |   | 15          |