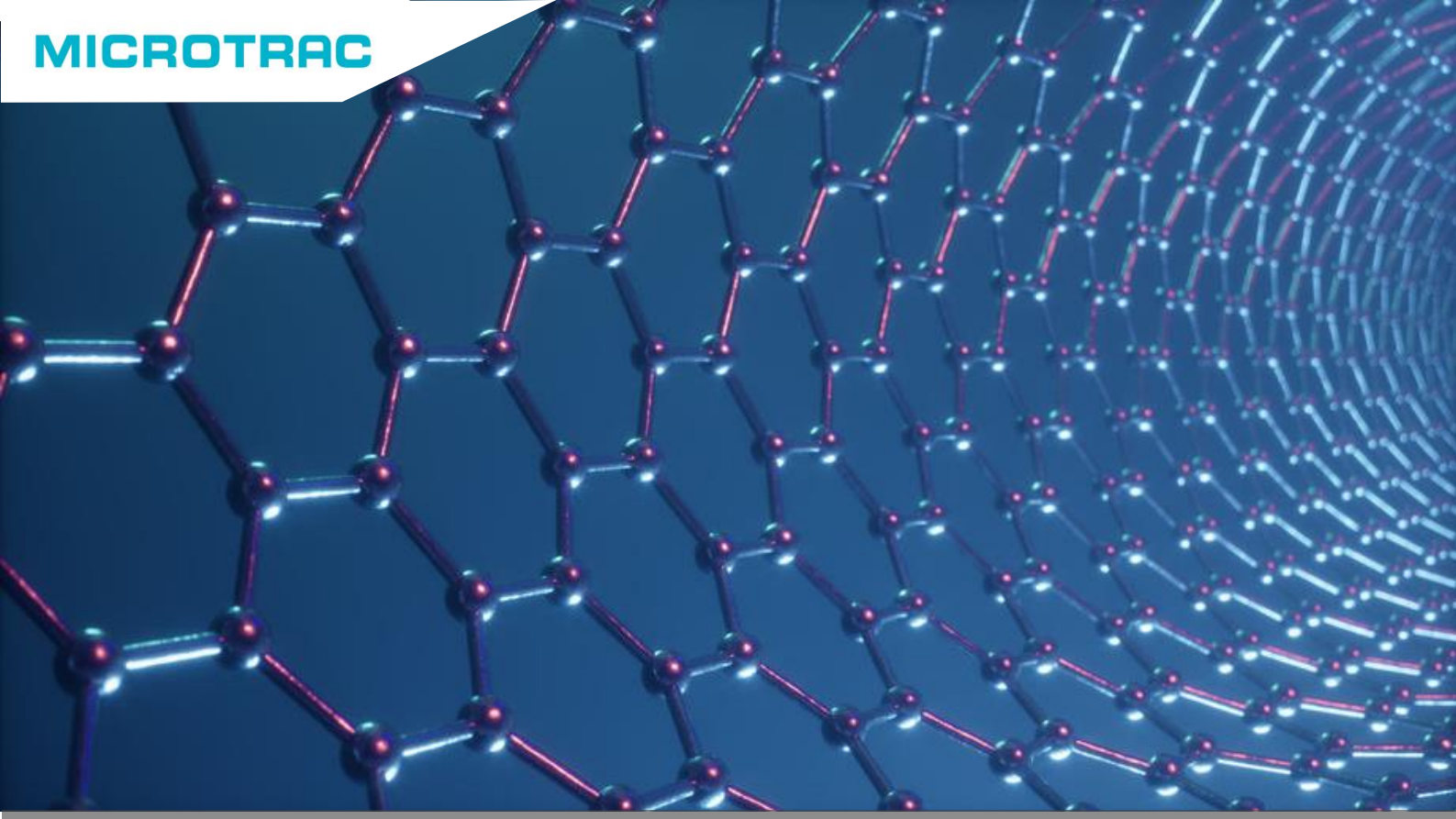

GRAPHENE OXIDES DISPERSIONS

OPTIMIZING THE DISPERSION OF FUNCTIONALIZED GRAPHENES IN DIFFERENT SOLVENTS

Context

Graphene has come into the spotlight in nanoscience and nanotechnology since it was discovered in 2004. Its unique nanostructure and extraordinary mechanical, electrical, and optical properties hold great promise for potential applications in many technological fields. Consequently, many progresses were made to provide commercial access to a large area of products. Nevertheless, because of the cohesion energy between the 2D layer of molecules, the use of graphene in a dispersed phase is still very challenging as it is difficult to assure homogeneity in most organic solvents and water. Recently, several efforts have been made to modify graphene with various methods to overcome this issue. In this study extracted from the literature, the dispersion of graphene oxide and its derivatives was analyzed in different types of solvents to demonstrate the advantage of using the TSI (TURBISCAN Stability Index) to quantify and rank solvent efficiency in dispersing these oxides.

TURBISCAN: How it works

TURBISCAN technology, based on Static Multiple Light Scattering, consists on sending a light source (880 nm) on a sample and acquiring backscattered (BS) and transmitted (T) signal all over the height of a sample. By repeating this measurement over time at adapted frequency, the instrument enables to monitor physical stability.The signal is directly linked to the particle concentration (φ) and size (d) according to the Mie theory: