

Isotope-ratio mass spectrometer

Isotope-Ratio Mass Spectrometry (IRMS) has been a key measurement technology for stable isotopes at the IAEA since the 1960s. IRMS is used to measure light stable isotopes in water, dissolved ions, gases and a host of other environmental sample types, including $^2\text{H}/^1\text{H}$, $^{13}\text{C}/^{12}\text{C}$, $^{15}\text{N}/^{14}\text{N}$, $^{18}\text{O}/^{16}\text{O}$ and $^{34}\text{S}/^{32}\text{S}$. The IAEA helps Member States access IRMS technology through provision of expert technical advice, proficiency testing programmes, and inter-comparison services to help maintain global quality assurance and control (e.g. WICO tests).



IRMS assays have been foundational in numerous IAEA benchmark programmes over the decades. These include the development and testing of primary reference materials like VSMOW and SLAP reference waters and many QA/QC ring tests. The IAEA uses IRMS technology for its critical global programmes where the highest precision assays are required, such as the Global Network for Isotopes in Precipitation (GNIP).