

Question Q1.6

The U.S. National Institute of Standards and Technology (NIST) maintains several accurate copies of the international standard kilogram. Even after careful cleaning, these national standard kilograms are gaining mass at an average rate of about $1 \mu\text{g}/\text{y}$ ($y = \text{year}$) when compared every 10 years or so to the standard international kilogram. Does this apparent change have any importance? Explain.

Solution

It is important because 1 kilogram today will mean something different than it does tomorrow. A change of $1 \mu\text{g}/\text{y}$ will be negligible for macroscopic objects, but it will be significant for objects on the microscopic scale or nanoscale.