

NIST MONTHLY HIGHLIGHTS

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Precise Determination and Critical Evaluation of Radon Half-Life

Radon and a precise and uniformly accepted value of its half-life, is of interest in a variety of disciplines ranging from studies in global atmospheric modeling and the geophysical sciences to indoor air quality and concern over its potential human health hazards. The NIST radioactivity group of the Ionizing Radiation Division recently has completed two studies on the radon half-life. The first study is a very precise determination of the half-life by $4\pi\alpha\beta$ liquid scintillation measurements that resulted in a value (3.8224 days) having a combined standard uncertainty of 0.05 percent on a relative basis. The second study consisted of a critical review and evaluation of 17 independent determinations of the half-life made over the past 90 years. A ^{222}Rn half-life value of 3.8232 days was recommended. This value has an estimated relative combined standard uncertainty of 0.01 percent. Both studies were prepared for publication and submitted to the journal *Radioactivity and Radiochemistry*.

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