# $^{139}$Xe

Dillard et al. reported the discovery of $^{139}$Xe in 1951 as part of the Manhattan Project Technical Series: "Determination of gas half-life by the charged-wire technique (II)" (1950Di01). A uranium salt solution was irradiated with neutrons in the Argonne Graphite Pile to produce $^{139}$Xe. Noble gases were swept out of the uranium solution during the irradiation and the half-lives were measured with the charged-wire technique. "Xe$^{139}$:... [The figure] shows the distribution of 85 m Ba$^{139}$ activity on the wire 8.5 hr after the end of the irradiation. The activity fell to half value every 6.14 in. At the flow rate of 100 cc/min an average gas atom required 6.66 sec to travel 1 in. up in the tube, hence the half-life of Xe$^{139}$ is 41 sec."

Adapted from reference (2013Ka01)


1950Di01 C. R. Dillard, R. M. Adams, H. Finston, and A. Turkevich, Nat. Nucl. Ener. Ser. **9**, paper68 p. 624 (1950).

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