

Also, it was found that a group of conversion lines including close lines O_4 and higher subshells is shifted towards higher energies in the case of the hydroxide source. At present, it is not quite clear whether this is a shift of the O_4 and higher conversion lines as the result of the internal electric field gradient, or, more probably, a satellite peak of the P_1 conversion line whose appearance is similar to that of the satellite peak of the O_3 line.

E15 Gamma-Rays from Thermal Neutron Capture in Lanthanum

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Capture gamma-rays from a spectroscopically pure lanthanum target were measured with Ge(Li) single and coincidence spectrometers. The detectors had effective volumes of 25 and 30 cm³, respectively, and resolutions of 3.3 keV for 1332 keV, and 6 keV for 5100 keV. A filtered reactor neutron beam was used as the source.

Seventy gamma-lines were found, 33 of them for the first time¹⁾. In coincidence measurements a number of cascade transitions were identified to facilitate construction of the decay scheme for ¹⁴⁰La. Notwithstanding existing data about the levels in ¹⁴⁰La from (d, p) reaction²⁾, only about 50% of the transitions could be fitted into the level scheme, including the capture state and levels to about 1500 keV.

Further experiments on the La(n, γ) reaction are in progress, primarily with the aim of getting a better gamma-ray energy resolution than the present one.

Fig. 1 shows the low energy part of the La(n, γ) spectrum as well as the corresponding spectra from the decay of the ¹⁴⁰La and the background. Fig. 2 presents the single spectrum, the corresponding coincidence spectrum with the selected 4846 keV line, and the chance coincidence spectrum.

References

- 1) L. B. Hughes, T. J. Kennett and W. V. Prestvich, Nucl. Phys. **89** (1966) 241;
- 2) Jean Kern, G. L. Struble and R. K. Sheline, Phys. Rev. **153** (1967) 1331.



