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WEEKLY SURVEYOR

USSR AND EASTERN EUROPE

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The casual reader could easily misinterpret a recent article in the New York Times on a new technique for laser isotope separation. Contrary to the mistaken impression the reader may acquire, the new method probably would not be economical for separating U-235 from U-238, and neither US nor USSR scientists have stated they are trying to apply it to the uranium enrichment problem.

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PHYSICAL SCIENCES AND TECHNOLOGIES

Misleading Implications Given in Report of New Soviet Single-Laser Isotope Separation Method: Soviet laser scientists at the Institute of Spectroscopy, Krasnaya Pakhra, have developed a new photodissociation method for separating isotopes using lasers. Experimental details were published in Russian journals earlier this year. The process differs from other laser isotope separation (LIS) methods in that a single laser is the only source of radiation used. In noting the achievement by R. V. Ambartsumyan and coworkers, a recent article in The New York Times stated that the method presumably would be useful for economically enriching uranium for use in weapons or reactors. The article also included a lengthy discussion of the possible advantages of using lasers to enrich uranium. According to the article, reports of Ambartsumyan's success in separating boron and sulfur isotopes has caused Los Alamos scientists to release details of their own "hitherto secret" work on a single-laser process for isotope separation. (The New York Times, 24 Apr 75)

Comment: The casual reader may misinterpret The New York Times article and acquire a mistaken impression of US and Soviet scientists' interest in trying to use the new single laser LIS method for uranium enrichment. The new method probably would not be economical for separating U-235 from U-238, and neither US nor USSR scientists have stated they are trying to apply it to the uranium enrichment problem. Moreover, no LIS technique has been successfully applied to enriching more than submicroscopic quanties of uranium.

The new dissociation method is based on incompletely understood transitions brought about when a molecule is made to absorb many laser photons simultaneously. To accomplish this, the laser light must be focused to extremely high intensity. Unfortunately, much laser energy is wasted in the process.

Although this particular LIS process may not be commercially viable for large scale uranium enrichment, using it to separate small amounts of other important isotopes for medical or materials research may be practical. The particular Los Alamos experiments mentioned in the article on separating boron, chlorine, and sulfur isotopes with the technique were never classified, contrary to the implications of The New York Times article. [redacted]