

# ON STUDY OF PHYSICO-CHEMICAL GAS DYNAMICS IN LASER ISOTOPE SEPARATION

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## Abstract

Based on the excellent properties of laser beam, Laser Isotope Separation (LIS) makes high selectivity of excitation and great efficiency of separation feasible. In comparison with the available techniques, LIS needs much less investment capital and energy consumption and has much lower production cost, so that it is one of important projects in the new technology revolution. Both of Atomic Vapour LIS (AVLIS) and Molecular LIS (MLIS) for uranium have their own advantages and disadvantages. The current weakpoint of MLIS is the insufficient development of  $16\mu\text{m}$  finely tunable laser and the most important advantages are from the supersonic expansion technique. It is one of the key problems in MLIS to use the supersonic expansion cooling in order to simplify the molecular spectrum and make the isotope shift usable. Research subjects on the supersonic flow in MLIS are presented and their importance is pointed out. To study the spectrum of van der Waals molecules and the dynamics of formation and dissociation of them in supersonic flow theoretically and experimentally is quite important and very interesting. Diode laser spectroscopy might be the best tool to do the measurements.

**Keywords** *physico-chemical gas dynamics; laser isotope separation; condensation; van der Waals molecules; laser spectroscopy*

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## 近海结构物的涡旋脱落力和疲劳分析

**提要** 讨论了近海结构物上的流体载荷,着重涡旋脱落的产生及效应。进行了有涡旋脱落时的疲劳分析。利用最新的推广 Miner 法则来计算累积损伤,从而估计了近海结构物的疲劳寿命。

**董务民译自:** Walker S., Brazier S.G., Recent Advances in Structural Dynamics (Ed., M.Petyt) (Paper presented at an Int.Conf.on Recent Advances in Structural Dynamics, 7-11 July, 1980, Univ.of Southampton, England), Vol. 1: 285-304. 参17