

ICIGE
International Commission
on Induced Gamma Emission



**FIRST INTERNATIONAL
INDUCED GAMMA EMISSION
WORKSHOP**

**Predeal, Romania
August 16 - 20, 1997**

TECHNICAL DIGEST

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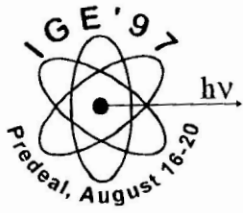
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INDUCED GAMMA EMISSION (IGE'97)

**Technical Digest of the 1st International Induced Gamma Emission Workshop (IGE'97)
(Predeal, Romania, 16-20 August 1997)**



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TECHNICAL DIGEST
for
FIRST INTERNATIONAL
INDUCED GAMMA EMISSION
WORKSHOP
IGE'97

Predeal, Romania
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INFLUENCE OF NUCLEUS SHELL STRUCTURE fpg-SHELL FOR EXCITATION METASTABLE STATES IN (γ,n) REACTION

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Abstract. An analysis of the isomeric yield (integral cross-section) excitation ratios of isomeric pairs in the odd-odd and even-odd nuclei of fpg-shell in the model of semidirect photoeffect was made. Attention is paid to the weak role of the proton subshell in populating the fpg-shell isomeric pairs.

In the works [1-4] research on the excitation of isomeric states in the even-odd nucleus fpg-shell was made. The structure in the (γ,n) reaction cross-section of the ^{88}Sr , ^{90}Zr , ^{92}Mo nuclei in the near-threshold region, which is correlated to spectroscopic factors of lower levels from pick-up reaction of these nuclei, was found. The correlation between the value of the isomeric integral cross-section ratios for even-odd nuclei of fpg-shell and the ratio of the number N_{1g} of neutrons in the $1g_{9/2}$ subshell and the number N_S of neutrons in the full fpg-shell have been determined (fig.2 [1]). This can be explained by considerable inclusion of semi-direct processes. In this case we can show that the isomeric ratio of the integral cross-sections may be evaluated by means of equation:

$$\eta = \frac{\sum_i S_j(i) a_{i \rightarrow m}}{\sum_j \sum_i S_j(i)}, \quad (1)$$

where $S_j(i)$ - spectroscopic factor of the i -level of j -shell, $a_{i \rightarrow m}$ - the feasibility of metastable state population m from i -level of j -shell. Odd-odd nuclei ^{80}Br and ^{88}Y data agree with the systematics for even-odd nuclei excepting the ^{84}Rb - nucleus. For this nucleus, agreement may be reached by means of equations (1) using experimental data for $S_j(i)$ and $a_{i \rightarrow m}$ [5, 6].

The fact that the behavior of isomeric ratios is similar for even-odd and odd-odd nuclei can represent an argument for the weak role of proton configurations during isomeric state population.

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