

Innovative Approach

PRELIMINARY STUDY ON TRITIUM AND ELEMENTS TRANSMUTATION IN WATER UNDER SIMULATED AEROSPATIAL CONDITIONS

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Abstract

A series of unexpected phenomena have been discovered under simulated aerospace conditions. The tritium-rich water passed through the aerospace condition. The Beta-radiation of tritium was measured before and after this process in terms of liquid scintillation counter. It was found that the radiation from tritium decreased every time it passed through this simulated system. the amount is about 20%. The trace elements analysis was made for distilled water before and after the same process. It was found also that the change of the trace elements, for example K from 0.0045ppm to 0.008ppm.

1. Introduction

It is very strange that a series of unexpected phenomena have been discovered in the aerospace condition in terms of the spaceships. An attempting has been started to mimic the aerospace conditions as that in the F-2 ionosphere(vacuum, ionization, weightless, etc.) in the laboratory on the earth. At these mimic aerospace conditions the tritium in water decreased, and the content of trace elements increased. All of these experimental phenomena should be introduced in this paper.

2. Experimental conditions

Temperature: ambient.

Work gas and pressure: Nitrogen, vacuum.

Environment: plasma, weightless and glow

Processing time : ~ 0.3 sec

Processing material : distilled water or natural water

The discharge power can be controlled , the glow might be selected.

3. Experiment

The water passed through the system of mimic aerospace conditions, in which the discharge power can be changed, the appear or disappear of glow are able to be controlled, the vacuum and weightless are kept . The schematic drawing of this system (DST-1) was shown in Fig. 1

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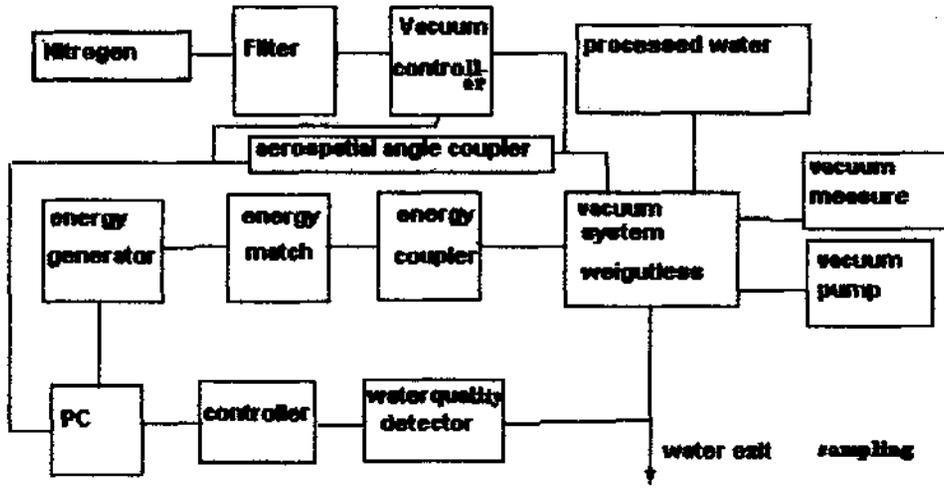


Fig.1 schematic drawing of mimic aerospace system

For sake of more sensitive measurement, the tritium was added in natural water, the content is about 1000-1500 Bq/L. Owing to limitation of environment control, this amount is the largest, but it is not enough sensitive for experiment. The tritium measurement was carried out with 2550 type liquid scintillation counter (Park company). The content of trace elements were measured by P. E. 5000 type automatic atomic absorption spectroscopy, 2010 type ion exchange chromatography, and ORION. STA20 ionometer etc.

4. Results

4.1 Tritium measurement

4.1.1 Natural water

Before processing 63Bq/L

After processing 38Bq/L

4.1.2 Rich-tritium water (1)

Sample No.	Before processing Bq/L	Processing once Bq/L	processing twice Bq/L
1	1200	900	800
2	1200	1000	600
3	1200	700	500
4	1200	900	800

All of these samples are processed in different discharge power, without glow.

4.1.3 Rich-tritium water (2)

Sample No.	Before processing Bq/L	After processing Bq/L	processing
1	1450	1350	
2	1450	1300	
3	1450	1500	glow

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4	1450	1600	glow
5	1700	1500	
6	1700	1400	glow +power
7	1700	1800	glow

These experiments used the different discharge power and glow. when glow was used, the tritium increased, conversely the tritium decreased.

4.1.4 Static experiment

Rich-tritium water was sealed in quartz ampoule, which was put in our system and processed. the result is following

Before processing 3590Bq/ml
 After processing 3600Bq/ml

Of course this processing was done without vacuum, plasma in it. The content of tritium did not change.

4.2 Trace elements experiment

Sampling the processing distilled water and analyzing it with above-mentioned instruments, the results were shown in table 1.

Table 1 the content of trace elements(ppm)

Element	K	Na	Ca	Mg	Zn
Before processing	0.0045	0.098	0.04	0.006	0.0145
After processing	0.008	0.165	0.663	0.018	0.006

4.3 The other results

The other phenomena were observed, for example the processed natural water (poor-tritium) the temperature decreased, when the rich-tritium water was processed the temperature increased about 2jæ. but it needs confirm precisely.

5. Discuss

1. All of this experiments are preliminary, it needs confirm, consummate.
2. From this work, the nuclear transmutation is possible at the suitable conditions.
3. Nuclear transmutation can be happened under some condition, how to understand it? We only can supply some phenomena.
4. Reifenschweiler's^[1] work on tritium decay showed that the nuclear radiation might chang due to the variation of the enviroment. We have got the same conclusion in our experiment.

Acknowledgements

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Reference:

1. Reifenschweiler, ICCF-5 proceedings, 163(1995)