

가

Drilling Test of Dry Process Fuel for Instrumented Irradiation Test

, ,

150

가

5

가

1.3mm hole

가

1/2

가

Abstract

The 5th irradiation test of dry process pellets in HANARO is being planned, in which the centerline-temperature of a pellet will be measured using thermocouples. For this study, the remote pellet-drilling device was developed. This device bores a hole of 1.3 mm with a diamond tip and drilling process is managed by lead weight. For the remote operation and maintenance, the device was designed considering maximum of remote operability and minimization of malfunction. From the hot drilling test of dry process fuel, it was found that separate drilling of the upper and lower parts of a pellet was more effective than drilling at a time. At these tests, although some damages were observed at the pellet ridge, the drilled pellets meet the HANARO criteria for the irradiation test.

1.

4 가 가 , 11 5
 . 5
 hole 가 . HALDEN JMTR
 LN₂가 가
 가 .
 [1-3]. 가

2.

가 가
 , (Al₂O₃) 가 UO₂
 (tip) , 가
 가 . 가 가 , 가
 가 가 , 가
 가 가 , 가
 가 ,
 가 가 ,
 가 .

가

,

.

(chip)

,

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1

,

,

가 가 DC

,

가

가 DC 가

가 LM 가

,

.

1

가

.

.

가

가 DC

1 가

가

가

,

가

,

.

3.

1500 kgf/mm², UO₂

99%

600 kgf/mm² 가

UO₂

2

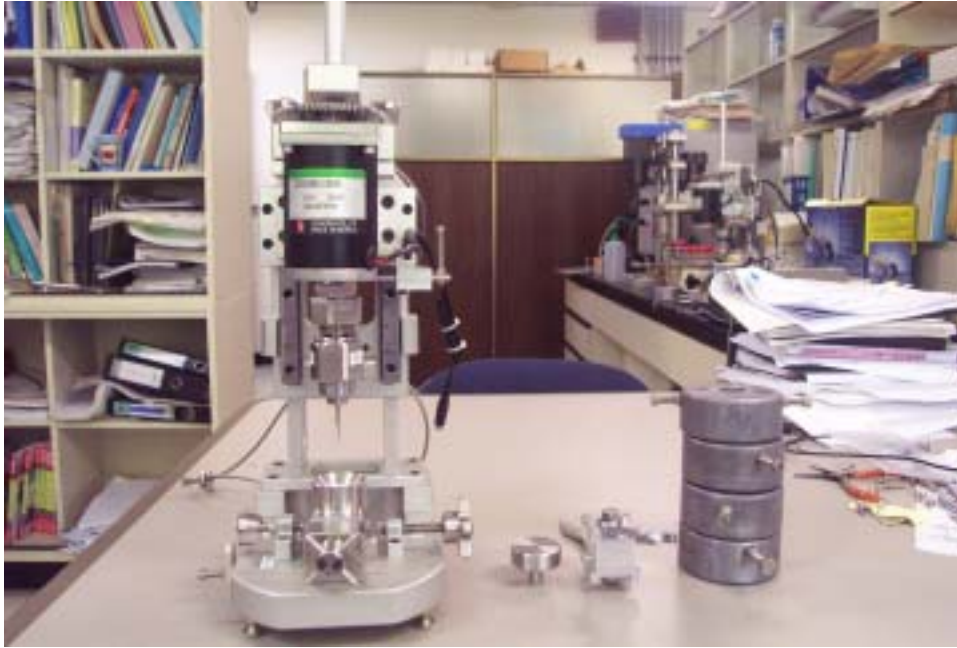
space block 10mm, 10mm

99% 가 . 가 가
가 가
10.38 g/cm³ , 10.65 mm,
11.4 - 11.7 mm .
가 1.2mm 1.3mm
2 10mm 1
1 1 30 2 가 .
가 가
2 11.5mm 1 4 가 1
가 가 가
5 가 가 6
가 가 .
2
1/2
30 7
4.
가 2003
11 가
1.3mm hole .
가 가
1/2
UO₂ 가 , UO₂
가 .

1.1 ., DUPIC , KAERI/TR-1484/2000,
, 2000.

1.2 H.Kleemann, Re-fabrication and instrumentation of irradiated fuel rods,
IFE/KR/F-2003/-12, 2003.

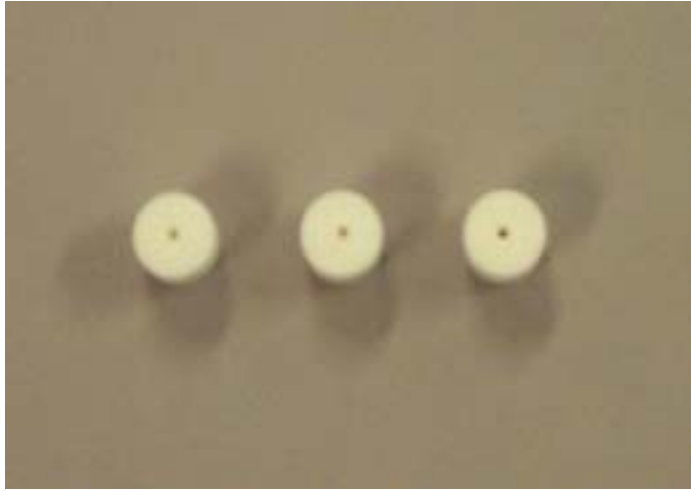
1.3 T.Johnsen, Re-instrumentation of irradiated rods with fuel thermocouples,
HWR-316, 1992.



1.



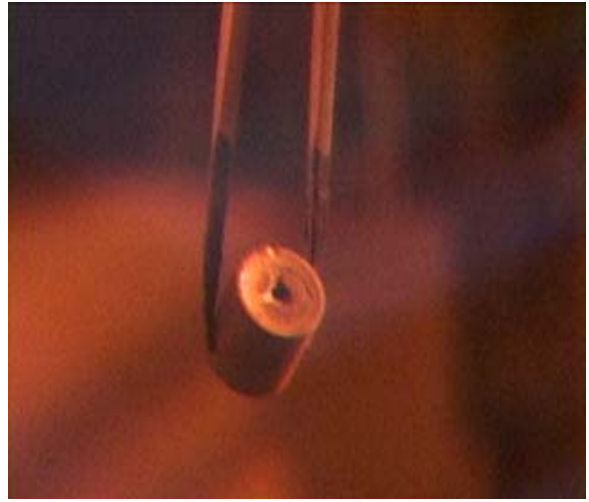
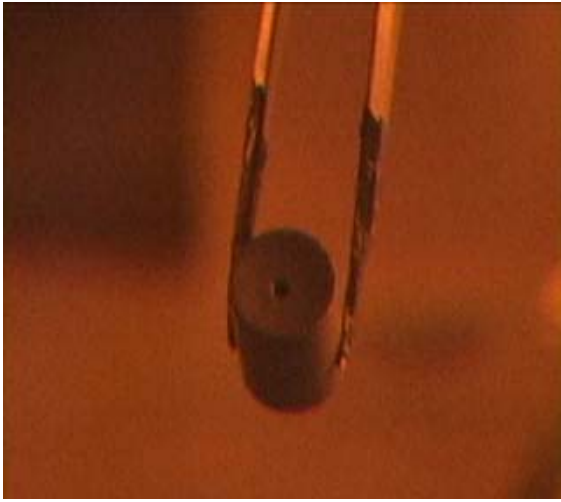
2.



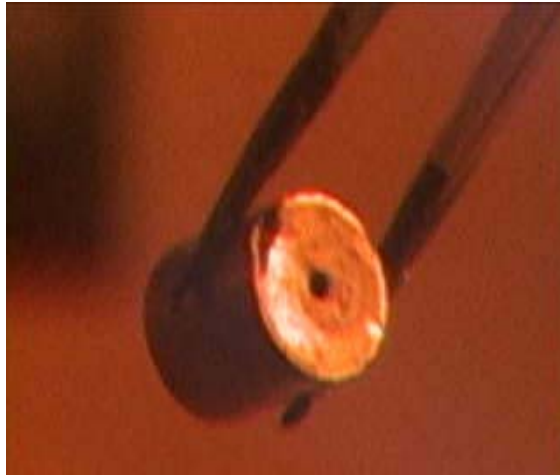
3.



4. 가



5. 가 ()



6.



7. 가 ()