

1.

U-Al ,
DOE(The Department of Energy) 1978 RERTR(Reduced
Enrichment Research and Test Reactor) program
90% U-Al
uranium-silicide (U_3Si_2 , U_3Si) 가 [1-5]. , uranium-silicide
가

U₃Si₂ Al
5 g-U cm⁻³ loading
90% uranium-silicide RHF
Orphee, BR-2 ,

U-loading 8-9 g-U/cm³ 가
1990 ,
U-Mo
[6]. -U 가 U-Mo ,
ingot , -U

-U ,
1980 () -U
가 [7-9].

ANL ,
U-10wt.%Mo U-10wt.%Mo
65 1 , U-10wt.%Mo
U₃Si₂ , U-10%Mo 70at.%

[10].
U-Mo U-10wt.%Mo

2.

U-10wt.%Mo ingot , -U
900 100 , chipping pulverization ,

-U 가 [7-9].
6.5 mm U-10wt.%Mo 25 mm ,
500 pyrex tube sealing

[10].

3.

1)

500 Al - 30vol% U - 10wt% Mo
 1 . 가 가 .
 U - 10wt.% Mo - Al uranium - aluminide
 , $Y = [K_0 \exp(-Q^{\text{th}}/RT)t]^{1/2}$ Y , Q^{th}
 uranium - aluminide , K_0 , t (), T
 R . 500 20
 U - 10wt.% Mo , 2 가
 Kirkendall effect 가 [11].

[12]. , chipping pulverization
 force 가 .
 가 (phase interface) U - 10wt.% Mo 가

2)

500 10 30vol% U - 10wt.% Mo
 1- (a) . 가
 가
 가 'kernel-like structure' 가
 가 island ,
 U - 10wt.% Mo ,
 island U - 10wt.% Mo . 500 20
 30vol% U - 10wt.% Mo
 1- (b) . 20 Al ,
 island 가 .
 , 가 , 10wt.% Mo
 island island
 uranium - aluminide .
 500 10 30vol% U - 10wt.% Mo
 2- (a) . 1/2
 , 가 .
 uranium - aluminide .
 island 가 . 30vol% U - 10wt.% Mo 500 20
 2- (b) . 20
 island 가 .
 U - 10wt.% Mo ,

4.

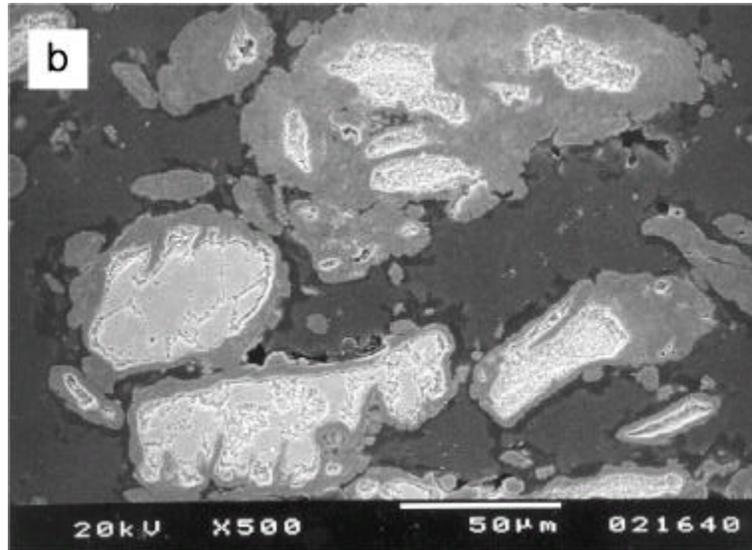
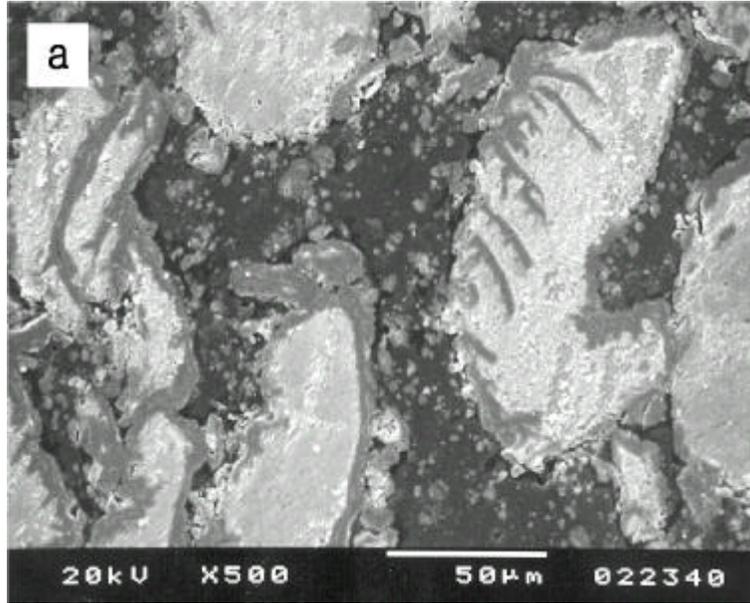
가 . 1) U-10wt.%Mo island
가 . 2) U-10wt.%Mo island

- [1] S. Nazaré, J. Nucl. Mater., 124 (1984) 14.
- [2] G. L. Hofman, J. Nucl. Mater., 140 (1986) 256.
- [3] R. C. Birther, C. W. Allen, L. E. Rehn and G. L. Hofman, J. Nucl. Mater., 152 (1988) 73.
- [4] W. Hwang et al., J. the Korean Nuclear Society, vol. 24, No.1 (1992).
- [5] J. P. Durand, P. Laudamy K. Richer, Proc. of 17th International Meeting on Reduced Enrichment for Research and Test Reactors, Williamsburg, USA, 1994.
- [6] G. L. Hofman and L. C. Walters, Materials Science and Technology, Vol. 10A, Nuclear Materials, ed. B. R. T. Frost (VCH Publishers, New York, 1994).
- [7] , , , 1996.
- [8] K. H. Kim et al., J. Nucl. Sci. & Tech., 34 (1997) 1127.
- [9] , “ ”, , KAERI/RR-1756/96, 1996.
- [10] K. H. Kim et al., Proc. of 22th International Meeting on Reduced Enrichment for Research and Test Reactors, Budapest, Hungary, 1999.
- [11] J. Burke: The Kinetics of phase Transformation in Metals (Pergamon Press, Oxford, 1965) pp. 184-195.
- [12] T. C. Wiencek R. F. Domagala, and H. R. Tresh, Nucl. Tech., 71(1985) 608.

1. 500

30vol.%U - 10wt.%Mo

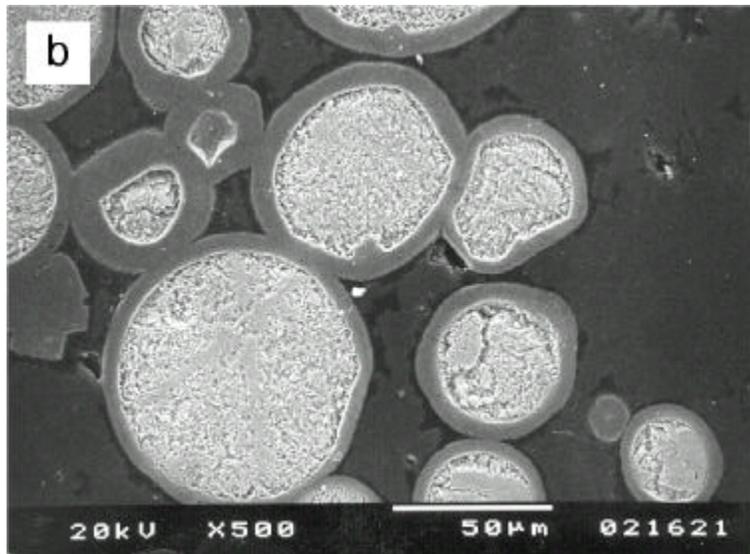
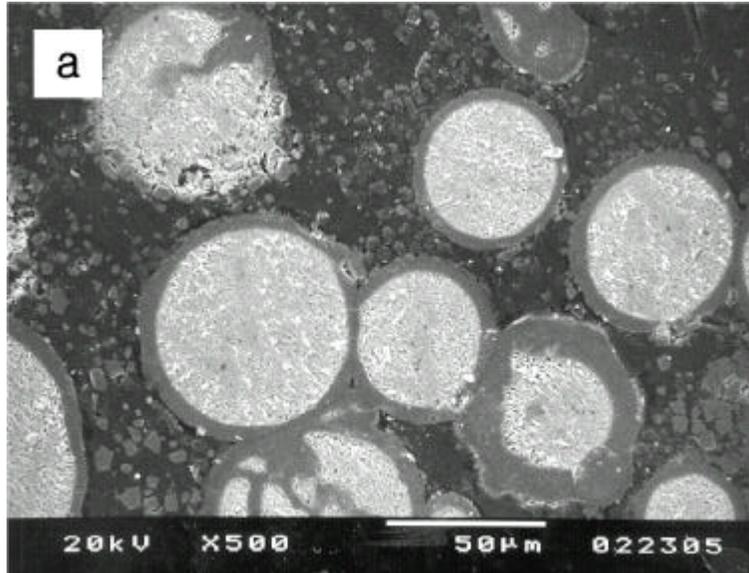
	(hr)	(μm)	(%)
	10	4.0	3.4
	20	5.2	6.7
	10	5.9	7.2
	20	8.0	14.8



1. 500

30vol%U - 10wt.%Mo

; (a) 10 , (b) 20 .



2. 500

30vol% U - 10wt.% Mo

; (a) 10 , (b) 20 .