

**RERTR 2016 - 37<sup>th</sup> INTERNATIONAL MEETING ON  
REDUCED ENRICHMENT FOR RESEARCH AND TEST REACTORS**

**OCTOBER 23-27, 2016  
RADISSON BLU ASTRID HOTEL  
ANTWERP, BELGIUM**

**Ultrasonic Testing for U-Mo Research Reactor  
Plate-type Fuels During Fabrication**

Yoon-Sang Lee<sup>1</sup>, Byoungjin Cho<sup>1</sup>, Sun-Chil Kwon<sup>1</sup>, Sang-Jin Park<sup>2</sup>, Young-Sang Joo<sup>2</sup>,  
Sunghwan Kim<sup>1</sup>, Young-Jin Jeong<sup>1</sup>, Chong-Tak Lee<sup>1</sup>

Research Reactor Fuel Development Division<sup>1</sup>  
SFR NSSS Design Division<sup>2</sup>

Korea Atomic Energy Research Institute, 111 Daedeok-daero 989 beon-gil, Yuseong-gu, 34057  
Daejeon, Korea

**ABSTRACT**

At KAERI, we have been developing fabrication processes for U-Mo research reactor plate-type fuels. During the fabrication of high density U-Mo fuel, quality control and nondestructive testing to fuel plate is important to secure the integrity of the fuel element. We have been applying ultrasonic testing technique to check the de-bonding, the cladding thickness measurement. To establish the inspection techniques, it requires verification of the accuracy of the inspection techniques.

For the verification of the inspection techniques, firstly surrogate plates made of tungsten powder with aluminum powder are investigated, and then U-Mo plates are tested. After inspection of them, the results are compared with destructive results. C-scan immersion ultrasonic inspection using pulse-echo technique is applied for measurement of cladding thickness, and through-transmit technique is applied for measurement of de-bonding.

Through this experiment, it will be contributed to establish ultrasonic inspection technique during the fabrication of high density U-Mo fuel plate.