

# Curriculum Vitae

## Taewoo Tak

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### AFFILIATION

Senior Researcher, 2016.12~  
Korea Atomic Energy Research Institute (KAERI)  
111, Daedeok-Daero 989Beon-Gil, Yuseong-Gu, Daejeon, Korea, 34057

### EDUCATION

- Aug 2011 ~ Feb 2017, Ph.D, Nuclear Engineering, Ulsan National Institute of Science and Technology (UNIST)
- Feb 2006 ~ Aug 2011, B.Eng, Mechanical Engineering & Control Engineering, Handong Global University (HGU)

### WORK EXPERIENCE

- Nuclear Design
  - SMART Reactor Core
  - Propulsion of the Floating Barge
  - BEAVRS benchmark using DeCART2D/MASTER and DeCART
- Design study of Ultra-long Cycle Fast Reactor Core
  - UCFR-1000 (1000MWe), UCFR-100 (100MWe)
  - Breed-and-burn strategy
  - Monte Carlo depletion
  - PWR spent fuel utilization
  - Power flattening using thorium blanket
  - Inherent safety, quasi-static reactivity balance
- Design study of Small Modular Fast Reactor
  - Concept development for SMR-SFR
  - Both deterministic and stochastic approach
  - Long cycle operation with minimum reactivity swing
  - Transportable module
  - Develop design requirement
  - Inherent safety, ATWS transient analysis
  - Assessment of control system
- I-NERI (International Nuclear Energy Research Initiative) project
  - International joint research in ANL (Argonne National Laboratory) June 2015 ~ August 2015
  - International joint research in ANL (Argonne National Laboratory) August 2016

## CERTIFICATES

- Awards & Scholarship
  - Journal Contribution award, Bronze, Korean Nuclear Society (October, 2015)
  - Excellent paper award, Bronze, Malaysian Nuclear Society (August, 2015)
  - Excellent poster award, Korean Nuclear Society (May, 2015)
  - Journal Contribution award, Bronze, Korean Nuclear Society (October, 2014)
  - Excellent poster award, Korean Nuclear Society (October, 2013)
  - PHYSOR scholarship, Korean Nuclear Society (October, 2013)
  - Doosan Heavy I&C scholarship, Korean Nuclear Society (May, 2012)
- Training (International)
  - Advanced MCNP training using Visual MCNP Editor (Daejeon, November, 2015)
  - FJOH 2012, KIT & CEA (Aix-en Province, August, 2012)
  - Research reactor KUCA (Kyoto University Critical Assembly) Experiment, Kyoto University (Osaka, July, 2012)
- Training (Domestic)
  - Reactor core design training, Central Research Institute (CRI, June, 2015)
  - McCARD developer training course, Seoul National University (SNU, March, 2015)
  - Measurement uncertainty training, Korea Testing & Research Institute (KTR, December, 2014)
  - McCARD user training course, Seoul National University (SNU, August, 2014)
  - LWR refueling core design training, KHNP CRI (HYU, July, 2014)
  - Basic theory and programming practice of nuclear reactor design and analysis with Monte Carlo method (INTEC, January, 2014)
  - McCARD user training course, Seoul National University (SNU, August, 2013)
  - Practical shell programming for system administrator, Samsung SDS (Seoul, July, 2013)
  - Interfacing MATLAB with C Code, MathWorks training services (Seoul, April, 2013)
  - Whole core transport analysis seminar, KAERI (Muju, March, 2013)
  - Workshop on the Advanced Monte Carlo Methodology, SNU (SNU, December, 2012)
  - 2012 Summer school for high performance computing, KISTI & UNIST Supercomputing center (UNIST, July, 2013)
  - Linux, Fortran Education , KISTI & PNU (PNU, June, 2012)
  - SWARAM (SNU Workshop on Advanced Reactor Analysis Methods), SNU (SNU, February, 2012)

- Education reactor AGN-201K (10W) Experiment, Kyunghee University (KHU, February, 2012)
- Monte Carlo neutron analysis method and MCNP practical training, Kyunghee University (KHU, October, 2011)
- Membership
  - American Nuclear Society Student Member (March, 2012)
  - Korean Nuclear Society Student Member (September, 2011)

## PUBLICATIONS SCI Journal

1. Sooyoung Choi, Kord S. Smith, Hanjoo Kim, **Taewoo Tak**, Deokjung Lee\*, "On the Diffusion Coefficient Calculation in Two-step Light Water Reactor Core Analysis," *Journal of Nuclear Science and Technology*, **Vol. 54**, No. 6, pp. 705-715, Mar 2017
2. Jinsu Park, Hyunsuk Lee, **Taewoo Tak**, Ho Cheol Shin, and Deokjung Lee\*, "Physics Study of CANDU Lattice with Coolant Void Reactivity Analysis," *Nuclear Engineering and Technology*, **Vol. 49**, pp. 6-16, Feb 2017
3. Chidong Kong, Hyunsuk Lee, **Taewoo Tak**, Deokjung Lee\*, Si Hwan Kim and, Seokjean Lyoo, "Accuracy Improvement of Boron Meter Adopting New Fitting Function and Multi-Detector," *Nuclear Engineering and Technology*, **Vol. 48**, pp. 1360-1367, Dec 2016
4. Jinsu Park, **Taewoo Tak**, T. K. Kim, Jiwon Choe, Yongjin Jeong, and Deokjung Lee\*, "Design Study of Long-Life Small Modular Sodium-Cooled Fast Reactor," *International Journal of Energy Research*, DOI: 10.1002/er.3609, Jul 2016
5. Taewoo Tak, Youqi Zheng, Deokjung Lee\*, and T. K. Kim, "Power Flattening Study of Ultra-Long Cycle Fast Reactor Using Thorium Fuel" *International Journal of Energy Research*, DOI: 10.1002/er.3552, May 2016
6. Taewoo Tak, Jiwon Choe, Yongjin Jeong, Deokjung Lee\*, T. K. Kim, and Ser Gi Hong, "Feasibility study on ultralong-cycle operation and material performance for compact liquid metal-cooled fast reactors: a review work," *International Journal of Energy Research*, **Vol. 39**, No. 14, pp. 1859-1878, November 2015
7. Taewoo Tak, Deokjung Lee\*, T. K. Kim, and Ser Gi Hong, "Optimization study of Ultra-long Cycle Fast Reactor core concept," *Annals of Nuclear Energy*, **Vol. 73**, pp. 145-161, November 2014
8. Taewoo Tak, Deokjung Lee\*, and T.K. Kim, "Design of Ultra-long Cycle Fast Reactor Employing Breed-and-burn Strategy," *Nuclear Technology*, **Vol. 183**, pp. 427-435, September 2013

## International Topical Meeting

1. Jinsu Park, **Taewoo Tak**, Jiwon Choe, Yongjin Jeong, and Deokjung Lee\*, and T. K. Kim, "Long-Life Small Modular Sodium-Cooled Fast Reactor Core Design with Breed-And-Burn Strategy," *PHYSOR 2016 – Unifying Theory and Experiments in the 21st Century*, Sun Valley, Idaho, USA, May 1 – 5, 2016
2. Taewoo Tak, Jiwon Choe, Yongjin Jeong, Jinsu Park, Deokjung Lee\* and T. K. Kim, "Power Flattening Study of Ultra-Long Cycle Fast Reactor Core," *Thorium Energy Conference 2015 (ThEC15)*, Mumbai, India, October 19-22, 2015
3. Jinsu Park, **Taewoo Tak**, Jiwon Choe, Yongjin Jeong, Deokjung Lee\*, and T. K. Kim, "Comparison of Predicted Breed-and-Burn Evaluation of a Small Modular Sodium-Cooled Fast Reactor with Several Code Systems," *Proceedings of the Reactor Physics Asia 2015 (RPHA15) Conference*, Jeju, Korea, September 16-18, 2015
4. Taewoo Tak, Jiwon Choe, Yongjin Jeong, Deokjung Lee, and T. K. Kim, "Study for Requirement of Advanced Long Life Small Modular Fast Reactor," *iNuSTEC2015*, Nilai, Malaysia, August 17-19, 2015
5. Taewoo Tak and Deokjung Lee, and T. K. Kim, "Optimization of Ultra-Long Cycle Fast Reactor Core," *PHYSOR2014*, Kyoto, Japan, September 28 – October 3, 2014
6. Taewoo Tak, Jiwon Choe, and Deokjung Lee, "Power Flattening and Breeding Performance Study for UCFR Loading Thorium Fuel," *The 19th Pacific Basin Nuclear Conference (PBNC 2014)*, Vancouver, British Columbia, Canada, August 24-28, 2014
7. CHOE Jiwon, PARK Minyong, CHOI Sooyoung, **TAK Taewoo**, and LEE Deokjung, "Upgrade of Mode-K Strategy for Load-Follow Operation of OPR1000," International Symposium on Symbiotic Nuclear Power Systems for the 21st Century (ISSNP2013), November 22-24, Beijing, China, 2013
8. Taewoo Tak, Hyunsuk Lee, Sooyoung Choi and Deokjung Lee, "Design of Small-size Ultra-long Cycle Fast Reactor with PWR Spent Fuel," *Proc. ICAPP 2013*, Jeju Island, Korea, April 14-18, 2013
9. Taewoo Tak, Deokjung Lee, and T.K. Kim, "Core Design Study of Ultra-long Cycle Fast Reactor Concept," *International Conference on Fast Reactors and Related Fuel Cycles (FR13)*, Paris, France, March 4-7, 2013
10. Tae Woo Tak, Hwanyeal Yu, Ji Hyun Kim, Deokjung Lee, and T.K. Kim, "Preliminary Design of Ultra-long Cycle Fast Reactor Employing Breed-and-burn Strategy," *PHYSOR2012*, Knoxville, Tennessee, USA, April 15-20, 2012

## International and Domestic Conferences

1. Taewoo Tak\*, Sungmin Kim, Cheonbo Shim, Kyunghoon Lee, "Solution of the BEAVRS Benchmark using the DeCART2D/MASTER Code System," *Transactions of the Korean Nuclear Society Spring Meeting*, Jeju, Korea, May 17-18, 2018
2. Taewoo Tak, Jinsu Park, Jiwon Choe, Deokjung Lee, Thomas. H. Fanning, Tyler Sumner, Guanheng Zhang, T. K. Kim, "Anticipated Transient without Scram Assessment of SM-SFR using SAS4A/SASSYS-1," *Transactions of the Korean Nuclear Society Autumn Meeting*, Gyeongju, Korea, October 27-28, 2016
3. Jiwon Choe, Youqi Zheng, **Taewoo Tak**, Deokjung Lee, Ho Cheol Shin and Ji-Eun Jung, "Axial Region Optimization for Cycle Length Extension of Small Modular PWR," *Transactions of the Korean Nuclear Society Spring Meeting*, Jeju, Korea, May 11-13, 2016
4. Jinsu Park, Hyunsuk Lee, **Taewoo Tak**, and Deokjung Lee, "Coolant Void Reactivity Analysis of CANDU Lattice," *Transactions of the Korean Nuclear Society Spring Meeting*, Jeju, Korea, May 11-13, 2016
5. Taewoo Tak and Deokjung Lee, "Study on Burning Strategy for Small-size Sodium-cooled Fast Reactor," *Transactions of the American Nuclear Society Summer meeting*, San Antonio, TX, June 7-11, 2015
6. Taewoo Tak, Jiwon Choe, Yongjin Jeong, Deokjung Lee, T. K. Kim, "Preliminary Study for Conceptual Design of Advanced Long Life Small Modular Fast Reactor," *Transactions of the Korean Nuclear Society Autumn Meeting*, Jeju, Korea, May 7-8, 2015
7. Jiwon Choe, **Taewoo Tak**, Yongjin Jeong, Deokjung Lee, and Taek Kyum Kim, "The Impact of Thorium Blanket on Long-Life Fast Reactor Core Performance Characteristics," Asian Nuclear Prospects (ANUP) 2014, Jeju Island, Korea, November 9-12, 2014
8. Taewoo Tak and Deokjung Lee, "Flattening of UCFR Power Distribution with Fuel Zoning," *Transactions of the Korean Nuclear Society Autumn Meeting*, Pyeongchang, Korea, October 30-31, 2014
9. Taewoo Tak and Deokjung Lee, "Optimization Study of Ultra-long Cycle Fast Reactor Core," *Transactions of the Korean Nuclear Society Spring Meeting*, Jeju, Korea, May 29-30, 2014
10. Jiwon Choe, Minyong Park, Sooyoung Choi, **Taewoo Tak**, and Deokjung Lee, "Application of Mode-K Strategy to Daily Load-follow operation of OPR-1000," *Transactions of the American Nuclear Society Winter meeting*, Washington D.C., Washington D.C., November 10-14, 2013
11. Taewoo Tak, Jiwon Choe, Hyunsuk Lee, and Deokjung Lee, "Verification of UCFR-100 Depletion Calculation with Deterministic Method by Comparing with Probabilistic Method," *Transactions of the American Nuclear Society Winter meeting*, Washington D.C., November 10-14, 2013

12. Taewoo Tak, Chidong Kong, Jiwon Choe, and Deokjung Lee, "Reflector Performance Study in Ultra-long Cycle Fast Reactor," *Transactions of the Korean Nuclear Society Autumn Meeting*, Gyeongju, Korea, October 23-25, 2013
13. Taewoo Tak, Hyunsuk Lee, Sooyoung Choi, Deokjung Lee, "Power Flattening Study for Ultra-long Cycle Fast Reactor UCFR-1000," *Transactions of the American Nuclear Society Summer meeting*, Atlanta, GA, USA, June 16-20, 2013
14. Taewoo Tak and Deokjung Lee, "Design of Small-size Ultra-long cycle Fast Reactor UCFR-100," *Transactions of the American Nuclear Society Winter Meeting*, San Diego, CA, USA, November 11-15, 2012
15. Taewoo Tak and Deokjung Lee, "A Study for Verifying Dynamic Characteristics of UCFR-1000 by Testing a Fuel Assembly," *Transactions of the Korean Nuclear Society Autumn Meeting*, Gyeongju, Korea, October 25-26, 2012
16. Tae Woo Tak and Deokjung Lee, "Design of Ultra-long Cycle Fast Reactor with PWR Spent Fuel," *Transactions of the Korean Nuclear Society Spring Meeting*, Jeju, Korea, May 17-18, 2012