

Evaluating Nuclear Forensic Signatures for Advanced Reactor Deployment: A Research Priority Assessment

Megan N. Schiferl^{1,2,3}, Jeffrey R. McLachlan^{1,2}, Appie A. Peterson², Naomi E. Marks³ and Rebecca J. Abergel^{1,2,4,*}

¹ Department of Nuclear Engineering, University of California, Berkeley, CA 94720, USA; mschiferl@berkeley.edu (M.N.S.); jmcclachlan@berkeley.edu (J.R.M.)

² Chemical Sciences Division, Lawrence Berkeley National Laboratory, Berkeley, CA 94720, USA; appiepeterson@lbl.gov

³ Nuclear and Chemical Sciences Division, Lawrence Livermore National Laboratory, Livermore, CA 94551, USA; marks23@llnl.gov

⁴ Department of Chemistry, University of California, Berkeley, CA 94720, USA

* Correspondence: abergel@berkeley.edu

Table S1: Exemplary advanced reactor designs along with the intended form and enrichment of their fuel for the determination of the material attractiveness (MA) sub-score.

Reactor Type	Reactor	Design Org. (Country)	Fuel Form	Enrichment	Ref.	MA Sub-Score
GFR	EM2	General Atomics (US)	UC	7.7% ²³⁵ U (avg.), 15% ²³⁵ U (max)	ARIS [1]	2
	ALLEGRO	EURATOM (Europe)	(1) MOX or UO ₂ (2) UPuC	(1) MOX (~4.5% ²³⁵ U, ~5% ²³⁹ Pu) or ~25% Pu (2) 29–35% Pu	GIF presentation [2]	
LMR	BREST-300 (LFR)	RDIPE (Russia)	PuN-UN	13.5% Pu	ARIS [1]	1
	W-LFR	Westinghouse (US)	(1) UO ₂ or MOX (2) UN	19.75–20% ²³⁵ U	ARIS [1]	
	PRISM	GE-Hitachi (US)	U-Pu-Zr	26 % Pu	ARIS [1]	
MSR	MCFR	TerraPower (US)	U, Pu, Th LiF	12% ²³⁵ U → natural U	[3,4]	1
	ThorCon	ThorCon (US/Indonesia)	UF ₄ , ThF ₄	5% ²³⁵ U+ ²³³ U (avg), 19.7% ²³⁵ U+ ²³³ U (max)	ARIS [1]	
SWCR	HP-LWR	Karlsruhe Institute of Technology	UO ₂	8–9% ²³⁵ U	ARIS [1]	1
	CSR1000	Nuclear Power Institute of China (China)	UO ₂	6.2% ²³⁵ U	ARIS [1]	
VHTR/GCR/HTGR	HTR-PM	Tsinghua University (China)	TRISO-UO ₂	8.5% ²³⁵ U	ARIS [1]	1
	SC-HTGR	Framatome (US)	TRISO-UO ₂	14.5% ²³⁵ U (avg.)	ARIS [1]	
FHR	Mk1 PB-FHR	UC Berkeley (US)	TRISO-UCO	19.8% ²³⁵ U	ARIS [1]	1
	Sm-AHTR	ORNL (US)	TRISO-UCO	8% ²³⁵ U	ARIS [1]	



Figure S1: Molten salt reactor class hierarchy based on IAEA report on the status of molten salt reactors [5].

References

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