16. A method for detecting slow neutrons, said method comprising:

reacting a plurality of slow neutrons with a high neutron capture cross section nucleus, wherein the subsequent compound nucleus decays into a plurality of particles;

exposing the plurality of particles to at least one inert gas, wherein the plurality of particles interact with the at least one inert gas to form at least one excimer;

detecting an optical signal comprising a plurality of photons in the far-ultraviolet region of the electromagnetic spectrum, wherein the optical signal in the far ultraviolet region of the electromagnetic spectrum indicates radiative decay of the at least one excimer, wherein the radiative decay of the at least one excimer comprises emission of the plurality of photons in the far ultraviolet region of the electromagnetic spectrum; and

processing the optical signal comprising the plurality of photons in the far-ultraviolet region of the electromagnetic spectrum to measure slow neutron fluence.

17. The method of claim **16**, wherein the compound nucleus is a high-capture cross-section nucleus.

18. The method of claim **17**, wherein said high-capture cross-section nucleus is selected from a group comprising ^{10}B, ^{6}Li, and ^{3}He.

19. The method of claim **16** wherein the at least one inert gas is selected from a group comprising Ar, Kr, and Xe.

20. The method of claim **16**, further comprising determining the number of photons emitted for each of the plurality of the reacted slow neutron.

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