A new method of signal amplification has been developed by a UCF researcher to offer improved signal amplification utilizing optical gain rather than traditional gain in the detector. The novel approach to optical signal amplification does not require active electronic elements, avoiding problems such as thermal run away that can cause a detector to become inoperative in harsh environments. Additionally, the technology includes embodiments requiring no power, allowing the sensor to operate for an indefinite period of time. Applications of this sensor include detection of neutrons, control and monitoring of nuclear reactors and fuel processing, characterization of nuclear fuel rods, and detection of concealed fissile and radioactive materials.

Benefits
- Optical signal amplification
- Improved sensitivity

Applications
- Nuclear reactors and fuel processing
- Characterization of nuclear fuel rods
- Detection of concealed fissile and radioactive materials
- Medical and military imaging systems
- Communication devices

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