**Designable spatially coherent wideband radiation and its application in white light lasers**

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Conventionally, the emission spectra were obtained by de-exciting excited centers from real excited energy levels to the ground state. By deploying a Nd3+-doped high-entropy glass system (HEGS), we discover that the spatially coherent radiation within a certain frequency range can be obtained without a common nonlinear optical process. A broadened phonon-assisted wideband radiation (BPAWR) is induced if the pump laser is absorbed by the HEGS. The subsequent low-threshold self-absorption coherence modulation (SACM) can be controlled by changing excitation wavelengths, sample size, and doping concentrations. Overturning the laser forming paradigm, the synergetic effect of the broadened phonons and absorption modes contributes to the desired emission spectra. With a continuous-wave (CW) laser as a pump source, a modulated emission with wide-spectrum and spatial coherence can be obtained by designing the absorption spectrum of the medium. Compared with traditional supercontinuum lasers, utilizing the BPAWR-SACM process is a more direct way to obtain CW white light lasers. Their repetition frequency and pulse width can be tuned by a Q-switched or mode-locked way, converting the white light lasers to short pulse light for more applications.



**Short Bio:**

**Linde Zhang** is a principal investigator of Novel Materials Lab in Shanghaitech University, China. He is also a founder of Synlumin Conuninex (Shanghai) Enterprise Development Co., Ltd. Previously he was also specially appointed as a researcher of laboratory of all-solid-state light sources in institute of semiconductors, Chinese academy of sciences. As an expert in IEC TC 113, he has already developed four international standards related with characterization methods of graphene. He focuses research fields mainly on novel materials, plasma and optics, and has a number of invention patents.