Military application of energy storage luminescent materials

Can luminescent materials be used as information carriers?
However,the traditional single-model luminescent materials used for optical information storage have shortcomings such as small information storage capacity,which drives the urgent need to develop advanced luminescent materials as information carriers.

How do luminescent materials work?
Luminescent materials are capable of transforming certain types of energy into electromagnetic radiation,which means that in response to a specific stimulus,these materials emit light typically within the ultraviolet (UV) to the infrared (IR) spectral region [1,2].

What is the future of luminescent materials?
Although this field is still being dominated by lighting and display applications, technologies such as bioimaging, biosensing, cell tracking, optical thermometry, photonics, information storage, disinfection and even water remediation have found new opportunities in luminescent materials [2, 6, 7, 8, 9, 10, 11].

What are rare earth luminescent materials used for?
In the 1960s,thanks to breakthroughs in purification technology,rare earth luminescent materials were successfully applied in lamps and cathode-ray tubesas original phosphors 5. Since then,with continuous and important progress arising from research on rare earth luminescent materials,applications have consistently been expanded.

Which luminescence materials should be studied in a special issue?
In this Special Issue,we welcome research on all luminescence materials,with particular emphasis on defect-engineered inorganic materials,such as transition metal (TM) and rare-earth (RE) doped semiconductors and isolators,to tailor their emission and promote fascinating phenomena like PersL or up-conversion.

What are some examples of luminescent materials?
One example of materials with intriguing luminescent phenomena is PersL materials,which have aroused much interest from researchers [6,12,13]. These materials have the ability to store energy in their defect (trap) centers and release it gradually by emitting light after the removal of the excitation source [6,12,14].

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