Exploring Sensitive Detection of Important Analytes with Meticulous Designing 'Aggregation Induced Emission' Compounds

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The interest on the development of new 'aggregation induced emissive' (AIE) materials of small organic molecules and metal complexes have been growing drastically because of their wide ranges of applications such as, sensitive detection of analytes, bioimaging, organic light emitting diodes, data storage devices etc[1]. AIE active compounds are completely free from the detrimental 'aggregation caused quenching (ACQ)' effect. These compounds are strongly emissive in the solid state while weak emission observed from the solution. Strong emissive nature of these compounds draws a great deal of attention to scientists for sensitive detection of various analytes. We will discuss the design of AIE active molecules, syntheses and their applications in detection of explosives, toxic volatile organic compounds, mercury ion, fluoride, zinc ion, acids and bases, pH etc. The mechanism behind the detection of these variable analytes with tailor-made AIE compounds will be explored. Discussion of the excited state properties of some relevant AIE compounds based on computational analysis will be made.

References

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