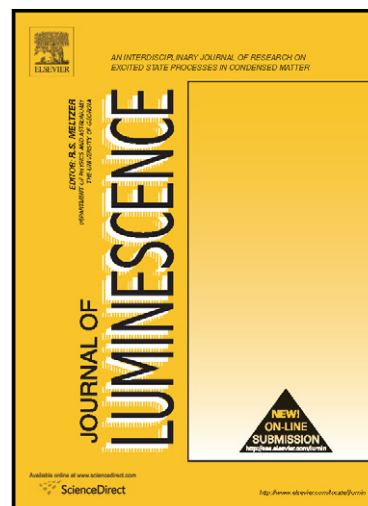


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## Fluorescence Spectral Studies of Gum Arabic: Multi-Emission of Gum Arabic in aqueous Solution

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### Abstract

Gum Arabic (GA), a food hydrocolloid is a natural composite obtained from the stems and branches of *Acacia Senegal* and *Acacia Seyal* trees. GA structure is made up of highly branched arabinogalactan polysaccharides. Steady-state absorption, fluorescence, and time-resolved fluorescence spectral studies of acid hydrolyzed GA solutions were carried out at various pH conditions. The fluorescence in GA is predominantly attributed to the presence of tyrosine and phenylalanine amino acids. The presence of multi-emissive peaks at different pH condition is attributed to the exposure of the fluorescing amino acids to the aqueous phase, which contains several sugar units, hydrophilic and hydrophobic moieties. Time-resolved fluorescence studies of GA exhibits a multi-exponential decay with different fluorescence lifetime of varying amplitude which confirms that tyrosine is confined to a heterogeneous microenvironment. The existence of multi-emissive peaks with large variation in the fluorescence intensities were established by 3D emission contour spectral studies. The probable location of the fluorophore in

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