

Evaluating Gallein Dye as a Beryllium Indicator

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Abstract : Beryllium can be found naturally in some fruits and vegetables (carrots, garden peas, kidney beans, pears) at very low concentrations, but is typically not clinically significant due to the low-level exposure and limited absorption of beryllium by the stomach and intestines. However, acute or chronic beryllium exposure can result in harmful toxic and carcinogenic biological effects. Beryllium can be both a workplace hazard and an environmental pollutant, therefore determining the presence of beryllium at trace levels can be essential to protect workers as well as the environment. Analysis of gallein, $C_{20}H_{12}O_7$, to determine if it is usable as a fluorescent dye for beryllium detection. The primary detection method currently in use includes hydroxybenzoquinoline sulfonates (HBQS), for which alternative indicators are desired. Unfortunately, gallein does not have the desired aspects needed as a dye for beryllium detection due to the peak shift properties.

Keywords : beryllium detection, fluorescent, gallein dye, indicator, spectroscopy

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