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## Development of Novel Scintillation Materials for Fast Neutron Detection

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Neutrons are/can be used in several applications such as material science, medical science, non-destructive investigation, security, neutron radiography and maintenance of social infrastructures such as bridge and tunnel. To detect the fast neutrons, gaseous detectors ( $^3\text{He}$ ,  $^{10}\text{B}$ ) and neutron scintillators ( $^6\text{Li}$ ,  $^{10}\text{B}$ ) can be used in such fields. Since gaseous detectors contain expensive gas or toxic gas like  $^3\text{He}$  and  $\text{BF}_3$ , scintillators are expected to be next generation neutron detector.

We focused on organic crystal scintillators, with no toxic material no hygroscopicity and low detection efficiency for gamma rays. scintillation properties of some organic scintillators such as trans-stilbene were investigated, and we have developed novel materials with higher light outputs or/and fast decay/rise time. In this paper, we show some novel organic scintillation materials prepared by the self-seeding vertical Bridgeman technique. For example, Benzoic-acid and benzoic-acid-based materials such as Sodium benzoate were prepared by the self-seeding vertical Bridgeman technique, and some samples were found to have shorter decay time than trans-stilbene have.

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