

A novel chitosan aerogel: improved flame retardant properties with DOPO-derivatives

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There have been some efforts to improve the flame retardant properties of the aerogels with various additives. Herein, the aerogel with chitosan and 9,10-dihydro-9-oxa-10-phosphaphenanthrene-10-oxide (DOPO) was synthesized and enhanced its flame retardant properties. DOPO is widely used as a flame retardant material due to its flame retardant mechanism of its gas and condensed phases as well as its own environmentally friendly properties. This halogen-free DOPO can be synthesized with chitosan and vinyltrimethoxysilane (VTS) in an attempt to improving the flame retardancy of the aerogel. DOPO-VTS can be characterized by <sup>1</sup>H-NMR and this synthesized aerogel was investigated by SEM and BET to differentiate the pure aerogel and DOPO-VTS chitosan aerogel. Besides, the flame retardant properties can be seen with the flammability tests.

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