

固相反应合成超细硼酸锌阻燃剂

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摘要 常规方法制备硼酸锌存在除杂和蒸发团聚问题, 无法满足制备纳米硼酸锌的需要.

研究了利用氧化锌和硼酸固相反应制备超细硼酸锌阻燃剂的方法. X射线衍射、扫描电镜和能谱分析表明, 利用氧化锌与硼酸在研磨中通过固相反应形成的硼酸锌属于无定形结构. 灼烧成炭试验表明, 氧化锌与硼酸的物质的量之比为1:1时制备的硼酸锌阻燃处理杨木粉的灼烧成炭率为38.9%, 高于对照的22.7%. 硼酸锌与聚磷酸铵之间存在复合效应, 硼酸锌的质量分数为50%时, 阻燃杨木粉的灼烧成炭率高达44.5%, 复合效应为22.2%. 固相反应是制备盐类纳米粒子的有效方法之一.

关键词 [固相反应](#) [超细硼酸锌](#) [阻燃剂](#)

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Synthesis of Nano Zinc Borate Fire Retardant by Solid State Reaction

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Abstract There are the handicaps as removing impurity and vaporizing solvent and reunited particle in the rut means of synthesis of zinc borate. These means do not meet the need of preparation of nano zinc borate. In this paper, a new way was researched for the preparation of nano zinc borate from ZnO and H₃BO₃. The results of XRD and SEM and XPS show that the zinc borate made from ZnO and H₃BO₃ by solid state rubbing reaction is an amorphous structure. The burning charcoal test indicates that 38.9% of charcoal ratio of poplar wood powder treated with zinc borate made from ZnO and H₃BO₃ at 1:1 mole ratio, higher than 22.7% of charcoal ratio of the comparison. The compound fire retardant from zinc borate and ammonium polyphosphate has the complex effect of fire retardation. It is 44.5% the charcoal ratio of poplar wood powder treated with the compound fire retardant from zinc borate and ammonium polyphosphate at 50% mass ratio. The complex effect of fire retardation is 22.2%. Solid state reaction is a availability way of preparation of nano salt particle.

Key words [solid state reaction](#) [nano zinc borate](#) [fire retardant](#)

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