

國立台灣大學技術行銷表

台大案號: 06A-101105

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| 產品/技術名稱 | 新穎 HCP-amine/NSP 難燃劑組成 |
| 發明人/單位 | 林江珍教授/台灣大學 高分子科學與工程學研究所 |
| 產品/技術說明 | 本發明提出利用磷腈與聚醚胺反應後再與脫層黏土摻混製備出難燃性材料。本發明之材料成功地結合含磷有機材料與無機黏土二者的難燃性質與對熱的阻絕特性，並將此材料導入高分子中。藉由此新穎難燃劑的導入，可有效使起始裂解溫度提升、延伸裂解溫度區間以及最終殘餘量的增加。在 10 wt % HCP-D400/NSP 添加下其 $T_{10\text{ wt \%}}$ (10 wt % loss)的溫度相對提升 88 °C，第二段的裂解溫度 $T_{85\text{ wt \%}}$ (85 wt % loss)也相對提升 190 °C，其結果皆優於HCP-D400 插層MMT之耐燃效果。 |
| 應用範圍 | 應用包括電子零組件材料如印刷電路版、半導體封裝材，或其他功能性耐燃產品上。 |
| 產品/技術優勢 | 成功以脫層型黏土與有機難燃劑結合，有效改善傳統磷系難燃劑導入材料後造成材料起始裂解溫度下降特性。 |
| 市場潛力 | 難燃劑在工業界有廣大的應用且為重要的材料之一，其應用領域為電子零組件材料如印刷電路版、半導體封裝材，或其他功能性耐燃產品。 |
| 產品/技術 智財權保護方式 | 專利申請中 |

Marketing Abstract of NTU's Invention Disclosure

NTU's docket no: _____ (由技轉室填寫)

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| Title | Preparation of Phosphazene-Jeffamine amines/NSP as flame retardant |
| Inventor (s) | Prof. Jiang-Jen-Lin/ Institute of Polymer Science and Engineering, National Taiwan University |
| Brief Description | We have investigated the benefits of synergistic effect of phosphazene with exfoliated clay on polymer retardant. The synthesis of phosphazene from hexachlorocyclotriphosphazene (HCP) and poly(oxypropylene)-amines (POP-amines) to form HCP-amines, and further mixed with nano silicate platelet (NSP), which can also be used as nanocomposite flame retardants and curing agents for epoxy resin. The preparation of epoxy resin nanocomposites increased the temperature of 88 °C (T _{10 wt % loss}) and 190 °C (T _{85 wt % loss}) for 10 wt % HCP-amines/NSP in epoxy nanocomposites. |
| Fields of Application | Coating, materials for electronic device use, semi-conductor sealing materials and any functional flame retardant materials. |
| Advantages | Halogen free, synergistic effect of phosphazene with exfoliated clay which increased both initial degradation temperature and char yields. |
| Market Potential | Materials with high degradation temperature are urgently in flame retardant area which not only for coatings and also the sealing materials in electronic devices and semi-conductors. |
| IP Right(s) | |