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Self-assembly of exfoliated molybdenum disulfide (MoS_2) nanosheets and layered double hydroxide (LDH): Towards reducing fire hazards of epoxy

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Highlights:

- 1. LDH/MoS_2 hybrids were facilely prepared by self-assembly of exfoliated MoS_2 nanosheets and LDH via electrostatic force.
- 2. LDH/MoS_2 hybrids showed a homogeneous dispersion in the epoxy matrix and no obvious aggregations were observed.
- 3. The addition of LDH/MoS_2 hybrids provided excellent fire resistance to epoxy matrix.
- 4. A rational flame retardant mode of action was proposed based on analysis of pyrolysis fragments and char residues.

Abstract:

In present study, LDH/MoS_2 hybrids were facilely prepared by self-assembly of exfoliated MoS_2 nanosheets and LDH via electrostatic force. The structure and morphology of the LDH/MoS_2 hybrids were characterized and then introduced into epoxy for reducing its fire hazards. Compared with single MoS_2, LDH/MoS_2 hybrids showed a more homogeneous dispersion in the epoxy matrix and no obvious

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