

Accepted Manuscript

Title: Self-assembly of exfoliated molybdenum disulfide (MoS₂) nanosheets and layered double hydroxide (LDH): Towards reducing fire hazards of epoxy

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PII: S0304-3894(17)30405-3
DOI: <http://dx.doi.org/doi:10.1016/j.jhazmat.2017.05.046>
Reference: HAZMAT 18605

To appear in: *Journal of Hazardous Materials*

Received date: 12-2-2017
Revised date: 20-5-2017
Accepted date: 24-5-2017

Please cite this article as: Keqing Zhou, Rui Gao, Xiaodong Qian, Self-assembly of exfoliated molybdenum disulfide (MoS₂) nanosheets and layered double hydroxide (LDH): Towards reducing fire hazards of epoxy, *Journal of Hazardous Materials* <http://dx.doi.org/10.1016/j.jhazmat.2017.05.046>

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Self-assembly of exfoliated molybdenum disulfide (MoS₂) nanosheets and layered double hydroxide (LDH): Towards reducing fire hazards of epoxy

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Highlights:

- 1. LDH/MoS₂ hybrids were facilely prepared by self-assembly of exfoliated MoS₂ nanosheets and LDH via electrostatic force.
- 2. LDH/MoS₂ hybrids showed a homogeneous dispersion in the epoxy matrix and no obvious aggregations were observed.
- 3. The addition of LDH/MoS₂ 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/MoS₂ hybrids were facilely prepared by self-assembly of exfoliated MoS₂ nanosheets and LDH via electrostatic force. The structure and morphology of the LDH/MoS₂ hybrids were characterized and then introduced into epoxy for reducing its fire hazards. Compared with single MoS₂, LDH/MoS₂ hybrids showed a more homogeneous dispersion in the epoxy matrix and no obvious

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