

Accepted Manuscript

Title: Low cracking ratio of paraffin microcapsules shelled by hydroxyl terminated polydimethylsiloxane modified melamine-formaldehyde resin

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PII: S0927-7757(17)30979-2

DOI: <https://doi.org/10.1016/j.colsurfa.2017.10.078>

Reference: COLSUA 22036

To appear in: *Colloids and Surfaces A: Physicochem. Eng. Aspects*

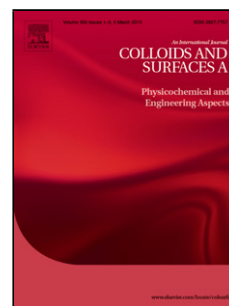
Received date: 24-8-2017

Revised date: 24-10-2017

Accepted date: 29-10-2017

Please cite this article as: Yuqiao Chai, Tianbo Zhao, Xia Gao, Jiaojiao Zhang, Low cracking ratio of paraffin microcapsules shelled by hydroxyl terminated polydimethylsiloxane modified melamine-formaldehyde resin, *Colloids and Surfaces A: Physicochemical and Engineering Aspects* <https://doi.org/10.1016/j.colsurfa.2017.10.078>

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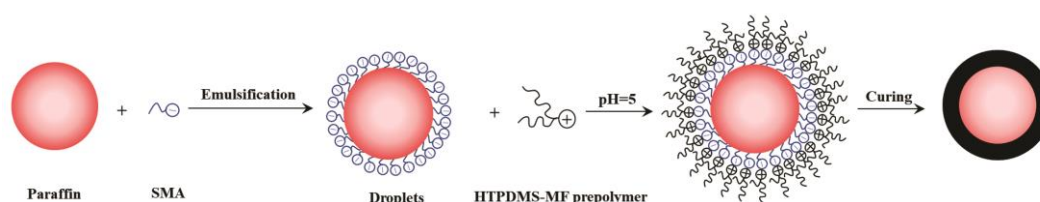
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Graphical abstract



Highlights

- (1) The microcapsules with silicon modified MF as shell were fabricated successfully.
- (2) The MF shell modified with silicon showed a better flexibility.
- (3) The cracking ratio of the modified microcapsules was reduced evidently.

Premature rupture caused by the high hardness and brittleness of melamine-formaldehyde (MF) resin has been a problem of MF microcapsules during synthesis and processing. In this work, we successfully encapsulated paraffin with hydroxyl terminated polydimethylsiloxane (HTPDMS) modified MF and the effects of HTPDMS dosage on the mechanical properties of MF were investigated. The FTIR spectra indicated that HTPDMS modified MF shell was successfully synthesized. SEM images and PSD results showed that the obtained microcapsules were spherical with smooth surface and an average diameter of 13 μ m. The XRD results indicated that the HTPDMS modified MF shell performed better

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