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Tailoring Nanocapsules for Self-Healing Materials

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Abstract

Self-healing materials are a class of materials that can repair themselves. This feature is very interesting because it allows for saving resources to build new materials, saving energy need to make new materials, and finally reducing the amount of waste that can contaminate the environment.

In our research, we use the power of nanotechnology to tailor new materials that are useful for self-healing and anticorrosion properties. We show here different methods for encapsulating healing agents and corrosion inhibitors. The release of the healing agents is either trigger by mechanical damage of the capsules or triggered by the corrosion of metal. In another approach, we embedded nanocapsules in nanofibers by colloid-electrospinning. The release profile of payloads encapsulated in the nanocapsules could be controlled by the materials constituting the nanocapsules shells and the nanofibers matrix.

Keywords: Anticorrosion, Colloid-electrospinning, Nanocapsules, Nanofibers, Self-Healing Materials

References

- [1] Zhao, Y.; Fickert, J.; Landfester, K.; Crespy, D. *Small* 2012, 8, 2954
- [2] Fickert, J.; Landfester, K.; Crespy, D. *Polym. Chem.* 2016, 7, 4330
- [3] Tran, T.H.; Vimalanandan, A.; Genchev, G.; Fickert, J.; Landfester, K.; Crespy, D.; Rohwerder, M. *Adv. Mater.* 2015, 27, 3825
- [4] Lv, L.-P.; Zhao, Y.; Vilbrandt, N.; Gallei, M.; Vimalanandan, A.; Rohwerder, M.; Landfester, K.; Crespy, D. *J. Amer. Chem. Soc.* 2013, 135, 14198
- [5] Vimalanandan, A.; Lv, L.-P.; Tran, T.H.; Landfester, K.; Crespy, D.; Rohwerder, M. *Adv. Mater.* 2013, 25, 6980

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