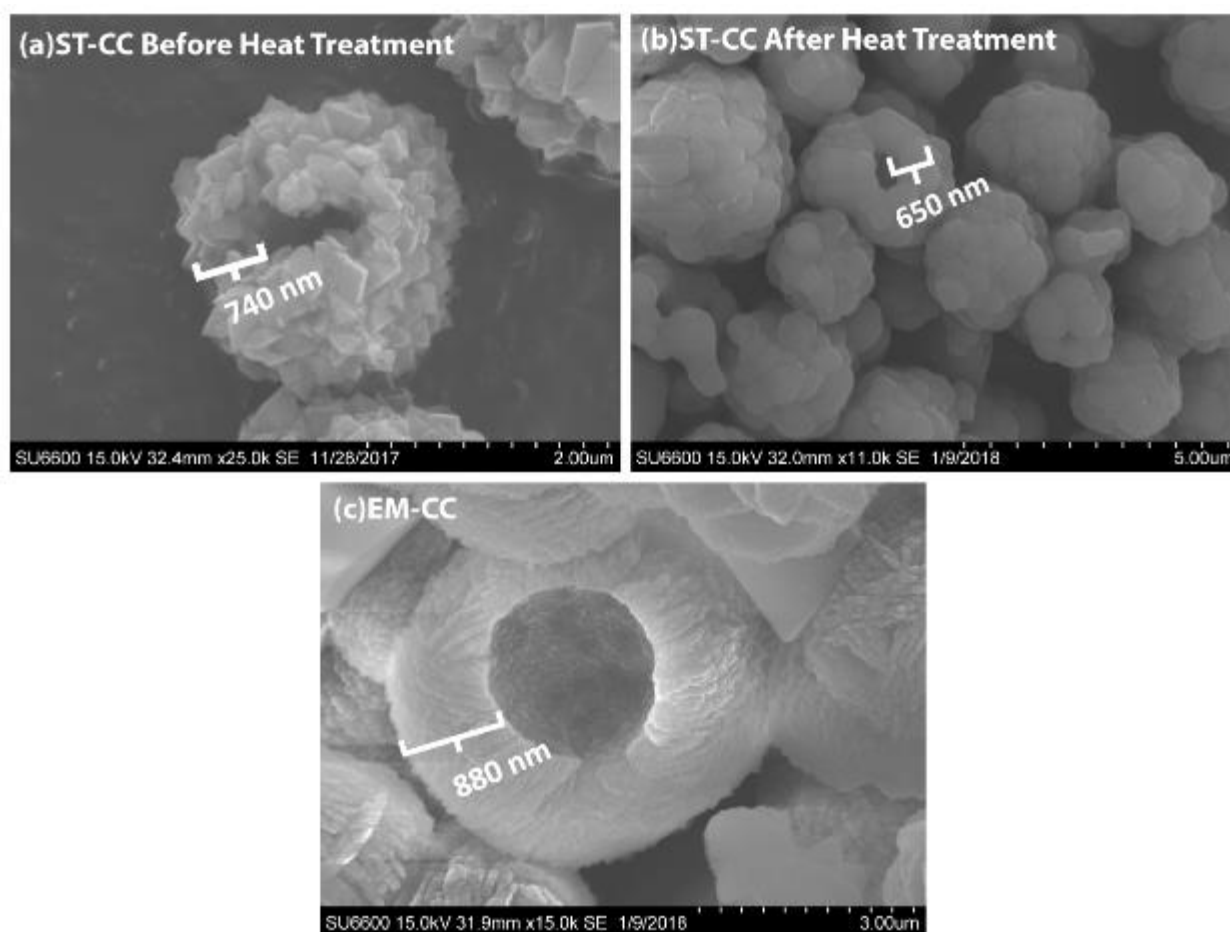


## Supporting Information

### Synthesize of Calcium Carbonate Microcapsules as Self-Healing Containers

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**Figure S1:** The images of broken ST-CC hollow MCC microcapsules which used to measure coating thickness before heat treatment (a), after heat treatment (b), and broken EM-CC microcapsules which used to measure coating thickness (c).

Epoxy polymer (ARALDITE 506) -  $^{13}\text{C}$  NMR

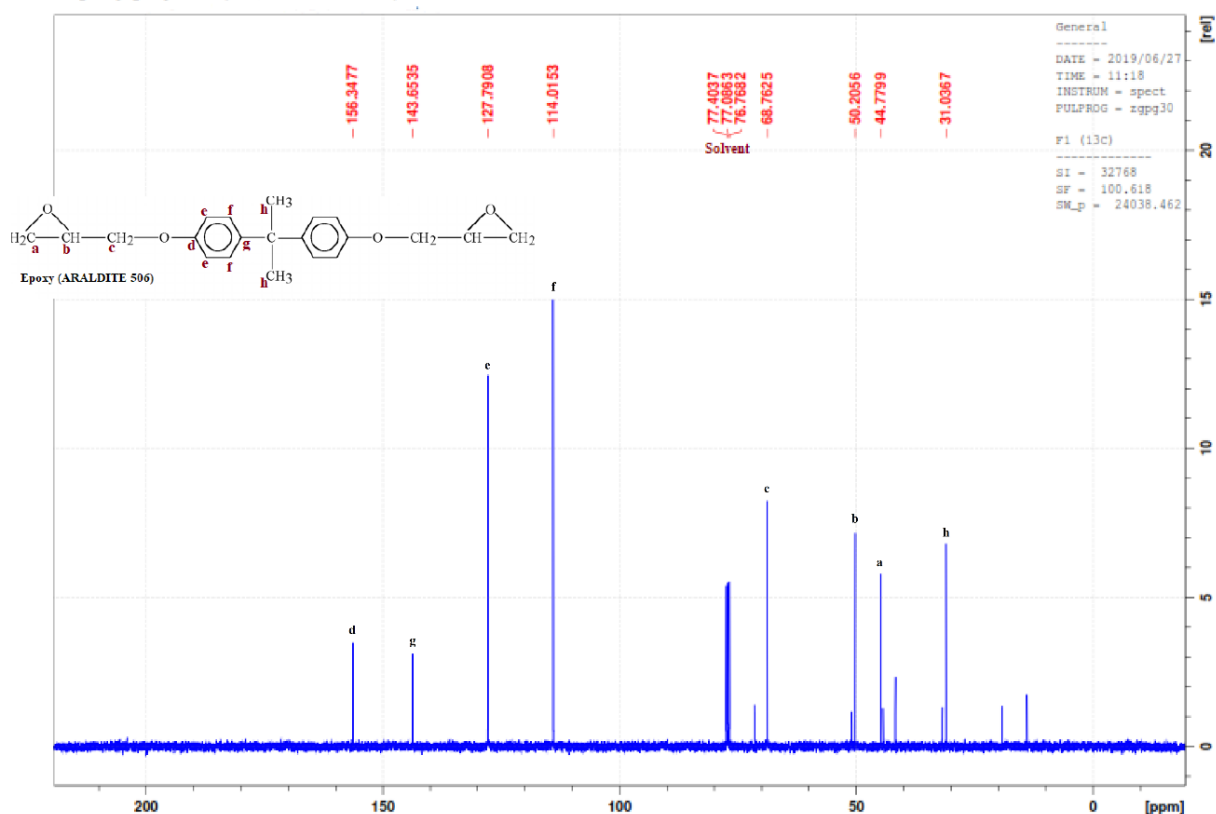


Figure S<sub>2</sub>(a): The  $^{13}\text{C}$  NMR spectrum of EPX polymer (ARALDITE 506) In the  $\text{CDCl}_3$  solvent which denoted the spins corresponding to EPX material.

Epoxy (ARALDITE 506) $^{13}\text{C}$  NMR DEPT135

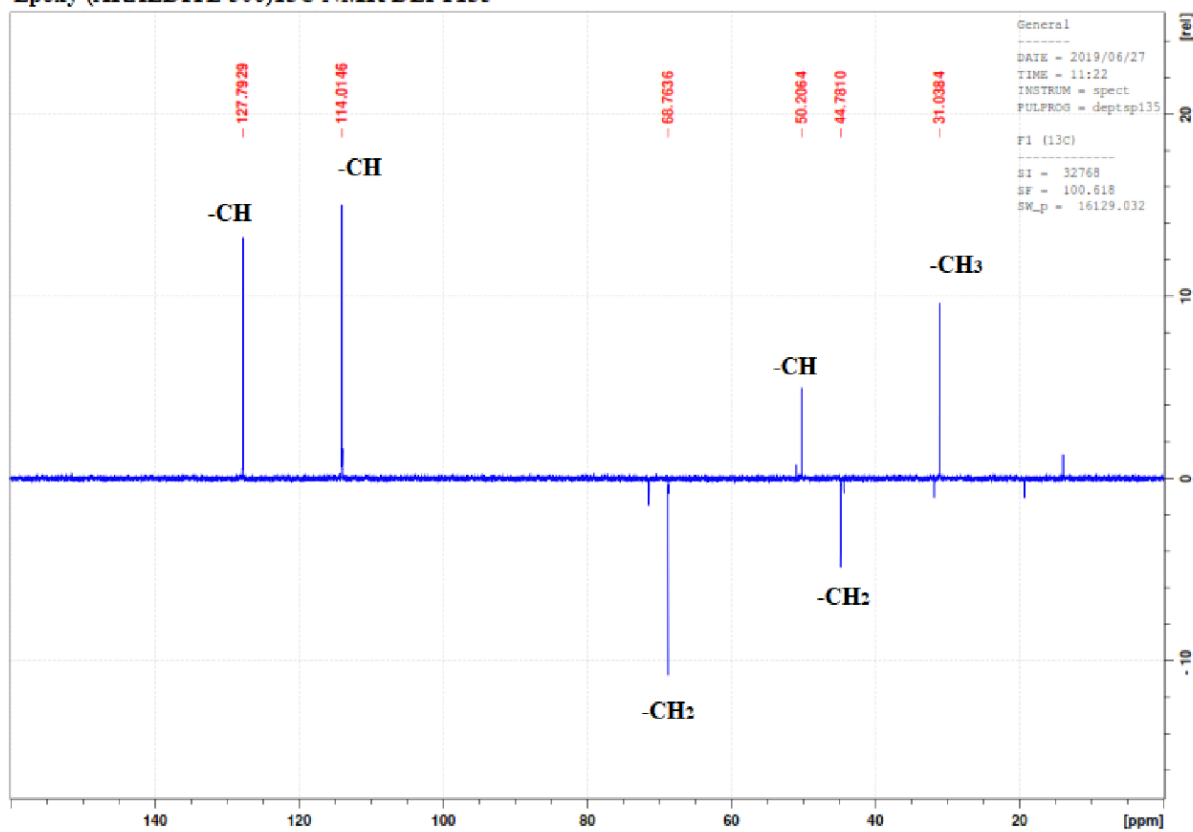
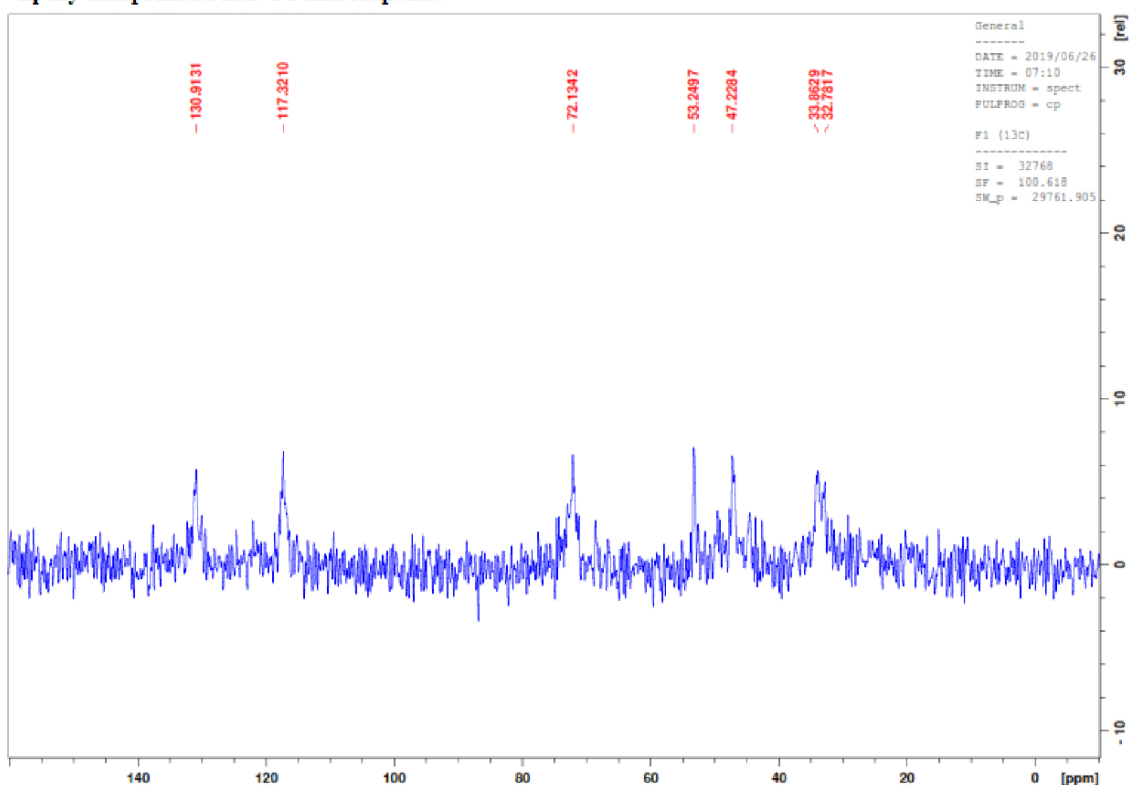


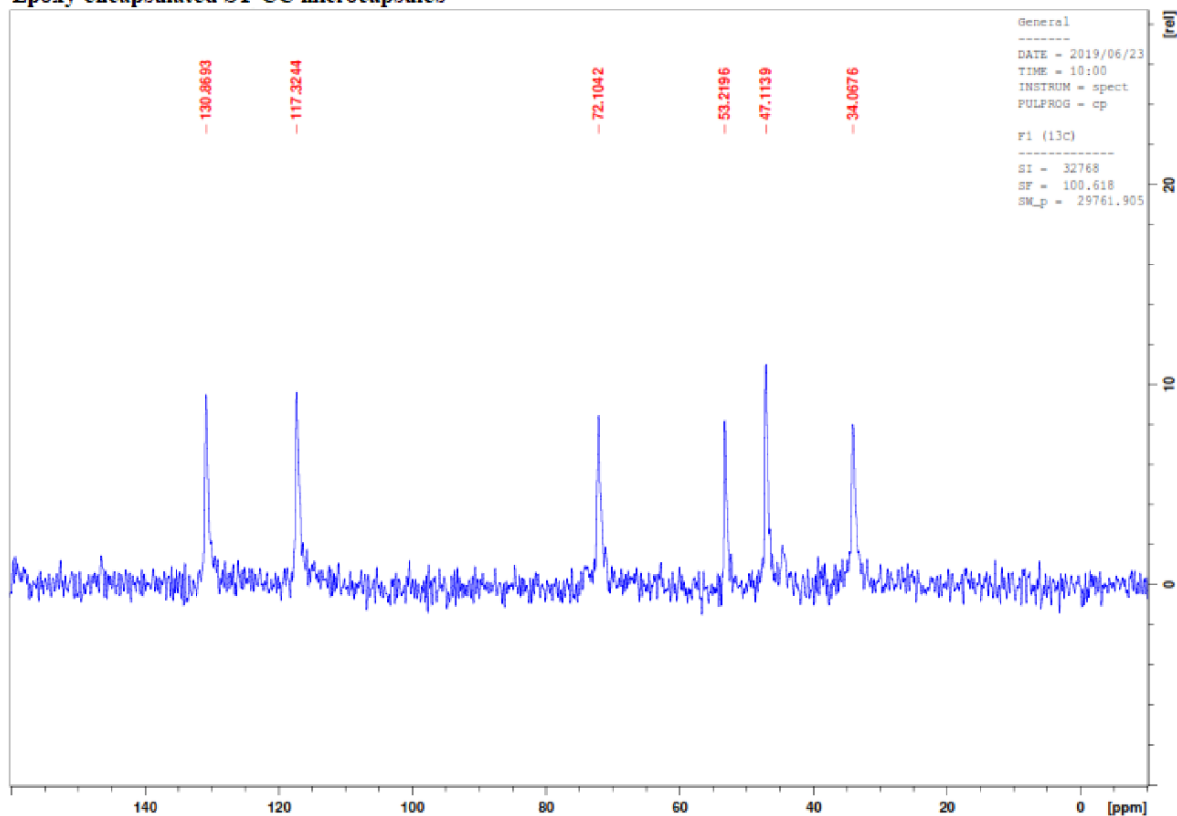
Figure S<sub>2</sub>(b): The  $^{13}\text{C}$  NMR DEPT 135 spectrum of EPX polymer (ARALDITE 506) In the  $\text{CDCl}_3$  solvent.

### Epoxy encapsulated EM-CC microcapsules

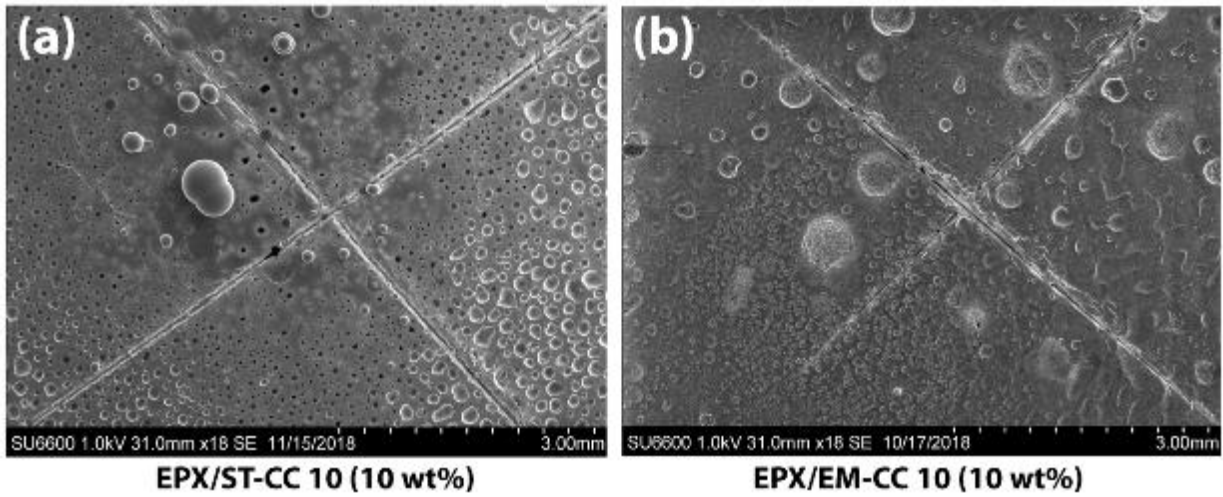


**Figure S<sub>3</sub>:** The <sup>13</sup>C solid NMR spectrum of EPX polymer (ARALDITE 506) encapsulated EM-CC microcapsules (all marks denoted the similar spins which corresponding to same encapsulated EPX material).

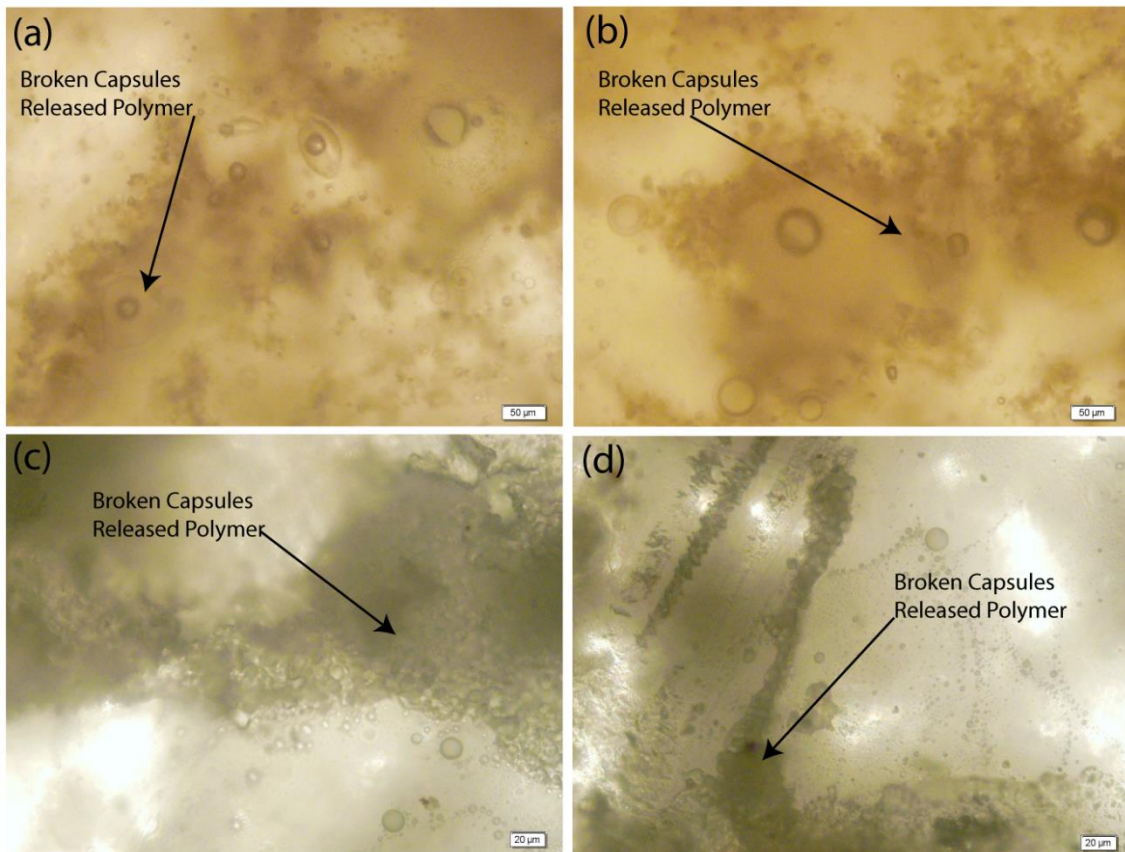
### Epoxy encapsulated ST-CC microcapsules



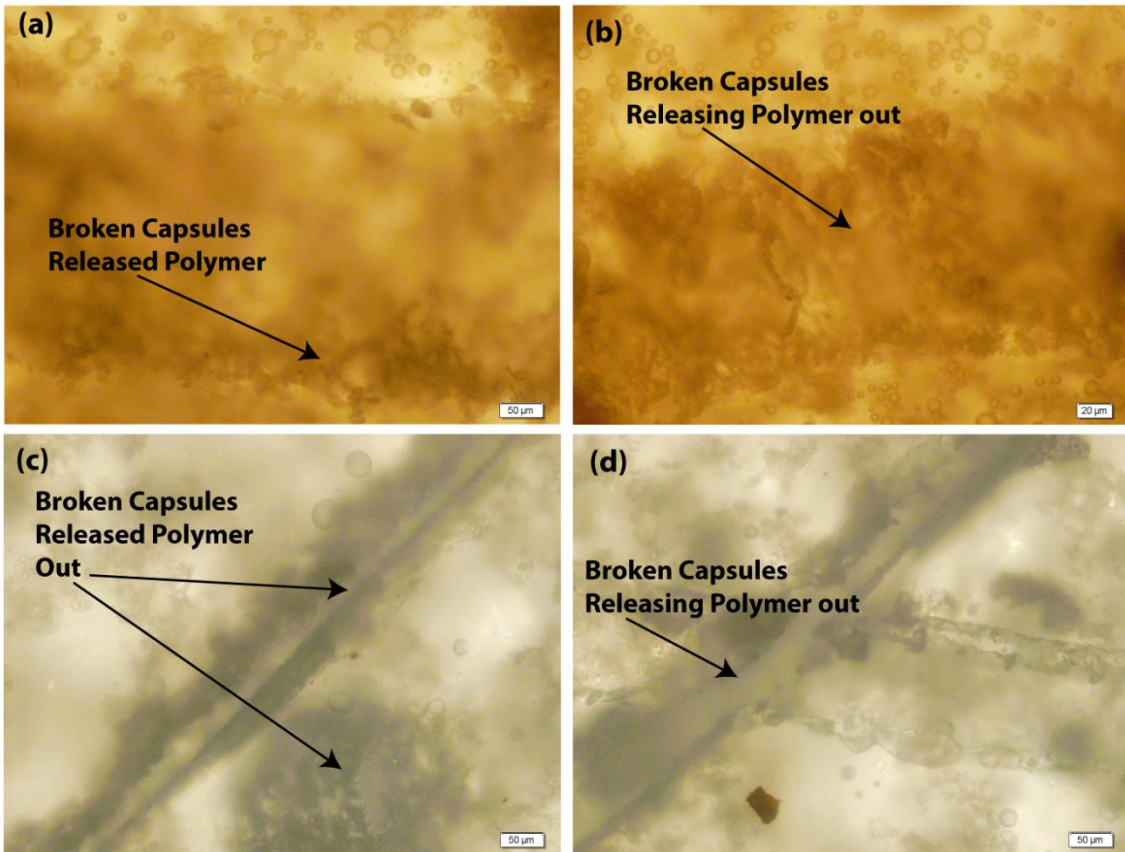
**Figure S<sub>4</sub>:** The <sup>13</sup>C solid NMR spectrum of EPX polymer (ARALDITE 506) encapsulated ST-CC microcapsules (all marks denoted the similar spins which corresponding to same encapsulated EPX material).



**Figure S5:** The scratch test on the EPX composite coatings on metal substrate (a) EPX/ST-CC10 and (b) EPX/EM-CC10 after 24 h from scratching with sharp object.



**Figure S6:** The LMC images of (a-b) EPX/ST-CC 20 and (c-d) EPX/EM-CC 20 which thin composites coatings to confirm the releasing of encapsulated EPX after scratching with sharp object.



**Figure S7:** The LMC images of (a-b) EPX/ST-CC 50 and (c-d) EPX/EM-CC 50 microcapsules which loading into EPX thin composite coatings to confirm the releasing of encapsulated EPX after scratching with sharp object.