

<Electronic supplementary information>

Repeatable Self-Healing of a Microcapsule-Type Protective Coating

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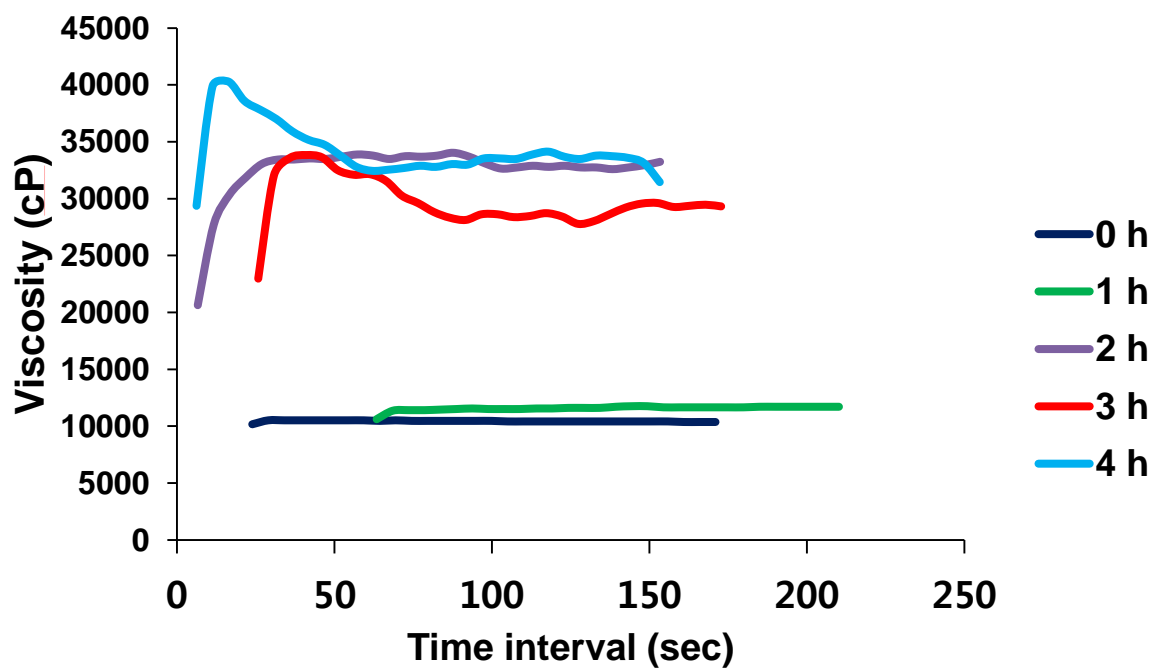


Figure S1. Viscosity measurement of CA-PDMS photoirradiated for various time periods.

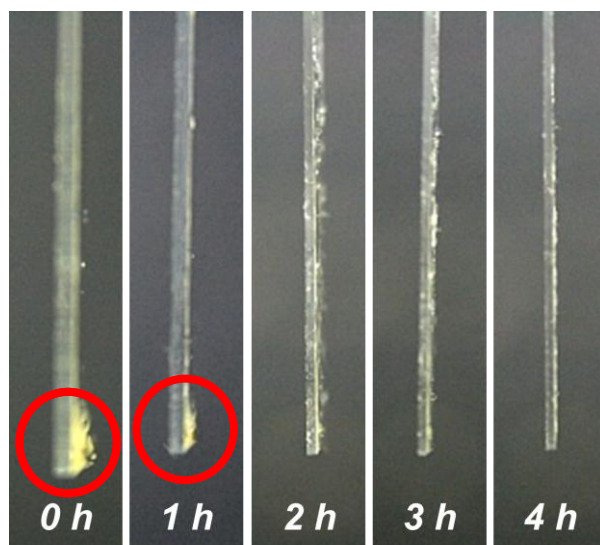


Figure S2. Flow test results for CA-PDMS. CA-PDMS was applied to one surface of slide glasses and photo-irradiated for various time periods. Each slide glass was held vertical, and the flow behaviour of the photo-irradiated CA-PDMS was observed for 15 min. Red circles indicate beads of CA-PDMS liquid formed on the right side of the slide glasses.

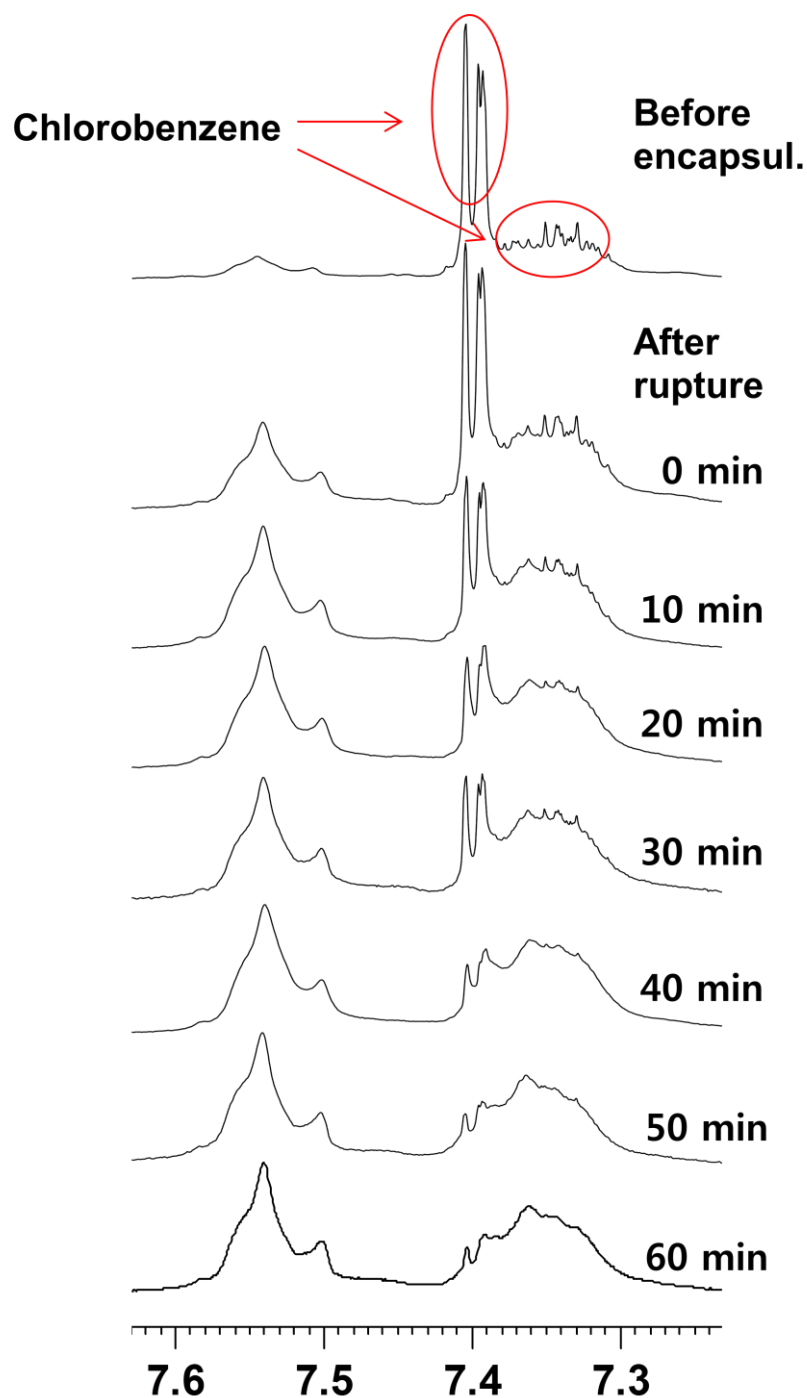


Figure S3. ^1H NMR spectra of core material samples that were obtained by crushing the microcapsules, storing the ruptured microcapsules under ambient conditions for various time periods and extraction with acetone- d_6 . Amount of chlorobenzene remaining in the core material was estimated based on the ratio of integration values of CA-PDMS and chlorobenzene in the spectra.

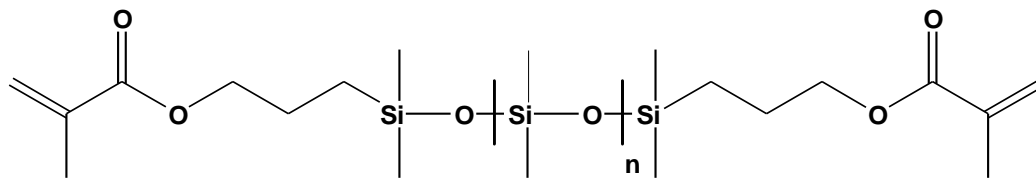


Figure S4. Structure of MAT-PDMS.

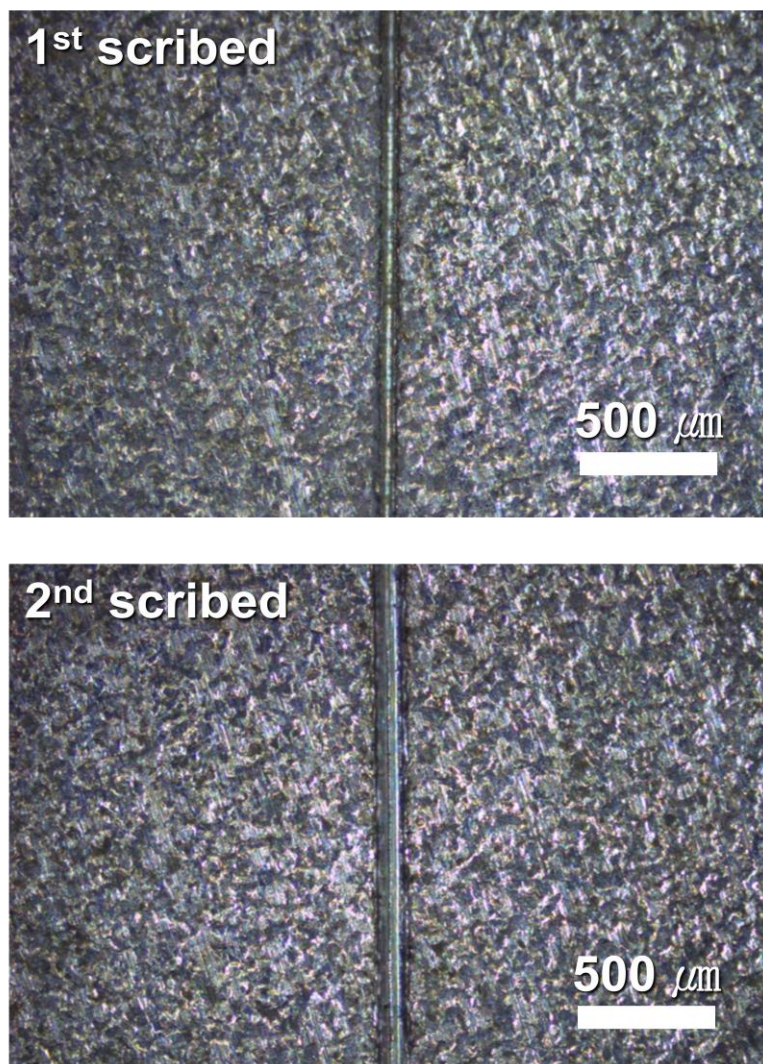


Figure S5. Photographs of scribed steel substrates that were taken using a microscope equipped with a CCD camera. The steel specimens were obtained by preparation of self-healing coatings on the substrates, scribing once or twice the coatings with a cutter blade, and then removing the coatings using acetone. The photographs clearly show that the scribes are deep enough to reach the surface of the steel substrates.

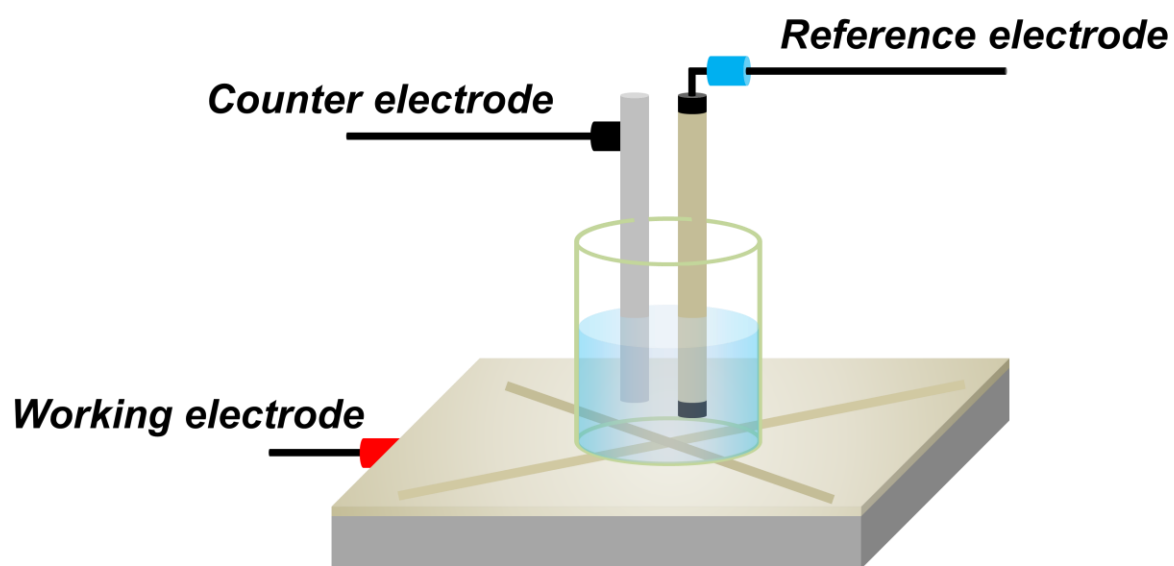


Figure S6. Schematic diagram of electrochemical test.