

**Electronic Supplementary Information (ESI) for**

**A Novel Polysiloxane Elastomer Based on Reversible Aluminum-Carboxylate  
Coordination**

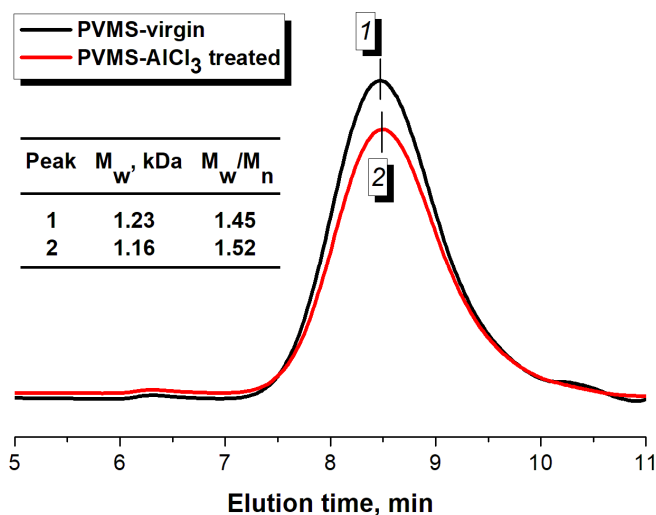
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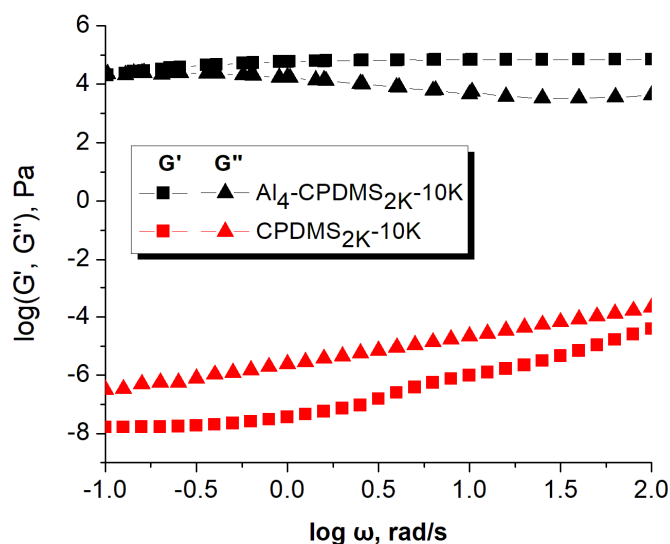
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**Figure S1.** Digital photos shows the self-healing of Al(III)-CPDMS.



**Figure S2.** GPC traces of PVMS (10 kDa, 1 vinyl per 2000 kDa) before and after  $\text{AlCl}_3$  treatment, black and red line, respectively. The  $\text{AlCl}_3$  treatment was conducted by mixing the PVMS-chloroform solution and  $\text{AlCl}_3$ -acetonitrile solution, and then the solvents were evaporated at 60 °C, the residue was dried under vacuum at 80 °C, which was the same procedure as the preparation of  $\text{Al(III)-CPDMS}$ . Then the PVMS were re-dissolved in chloroform for GPC test.



**Figure S3.** Dynamic frequency sweep of CPDMS and  $\text{Al(III)-CPDMS}$  at 10 °C. For CPDMS, the value of  $G''$  is always higher than  $G'$ , while for  $\text{Al(III)-CPDMS}$ , the rubbery plateau with  $G' > G''$  was observed. This difference shows that the  $\text{Al(III)-carboxylate}$  coordination bonds crosslinked the linear CPDMS to form an elastic network.