

### Facile method to reduce thermo-oxidation of PDMS by blending with natural polyphenols

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Diverse polymeric materials are designed and their physicochemical characteristics such as viscoelastic properties, Young's modulus, melting point, and density are important in their processing procedures. However, polymeric materials could be easily degraded, and as a result desired properties cannot be obtained. Since changes of material characteristics could cause functional failure, studies on polymeric antioxidation have been proceeded. In this study, polydimethylsiloxane (PDMS) is mixed with micron sized tannic acid, irganox1010 and naringenin particle forms and their characteristic changes in thermo-oxidative condition are investigated. After 250 °C for 3 days, Young's modulus of PDMS with 1 wt% antioxidant increased by 3-fold, which is significantly less than that of neat PDMS, which increased by 40 fold. FT-IR spectroscopy showed that the peak changes of PDMS containing antioxidant are much smaller than that of neat PDMS after oxidation.