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Quantitative measurement of adhesion of ink on plastic films with a Nano Indenter and a Scanning Probe Microscope[1] WEIDIAN SHEN, BIN JIANG, Eastern Michigan University — Plastic film packaging is widely used these days, especially in the convenience food industry due to its flexibility, boilability, and microwavability. Almost every package is printed with ink. The adhesion of ink on plastic films merits increasing attention to ensure quality packaging. However, inks and plastic films are polymeric materials with complicated molecular structures. The thickness of the jelly-like ink is only 500nm or less, and the thickness of the soft and flexible film is no more than 50μm, which make the quantitative measurement of their adhesion very challenging. Up to now, no scientific quantitative measurement method for the adhesion of ink on plastic films has been documented. We have tried a technique, in which a Nano-Indenter and a Scanning Probe Microscope were used to evaluate the adhesion strength of ink deposited on plastic films, quantitatively, as well as examine the configurations of adhesion failure. It was helpful in better understanding the adhesion mechanism, thus giving direction as to how to improve the adhesion.

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