

接着と酸塩基

Role of Acid-base Interaction in Adhesion

前田 重義^{*(1)}

Shigeyoshi MAEDA

抄 録

高分子と金属の接着に対する酸塩基反応の寄与について概説した。接着における酸塩基反応の役割はFowkesによって始めて提唱され、現在では高分子・金属間における電荷移動による化学結合の存在が電子分光法などにより確かなものとなっている。Lewisによって提唱された酸塩基反応はMullikenやKlopmanなどによって電荷移動理論としてその量子化学的根拠が与えられた。代表的な理論であるDragoのE-C関係式、PearsonのHSAB理論及びGutmannのドナー・アクセプター理論について、その相互の関係と評価法について論じた。

Abstract

The contribution of acid-base interaction to the adhesive bonding between polymers and metals has been reviewed. Acid-base theory in adhesion was first proposed by Fowkes and has been widely accepted as the reasonable theory in which a chemical bond due to charge transfer formed at the polymer and metal interface. Recent surface analysis such as X-ray photoelectron spectroscopy (XPS) proved the presence of the chemical bonding between them. Lewis acid-base theory in chemical reactions that are based on the Fowkes theory has been given its fundamentals using the quantum chemical approach by Mulliken and Klopman. E-C relation by Drago, HSAB theory by Pearson and donor-acceptor theory by Gutmann, those of which are proposed to evaluate the acid-base interaction, were discussed and mutually compared.

^{*(1)} 日本パーカラライジング(株) 顧問