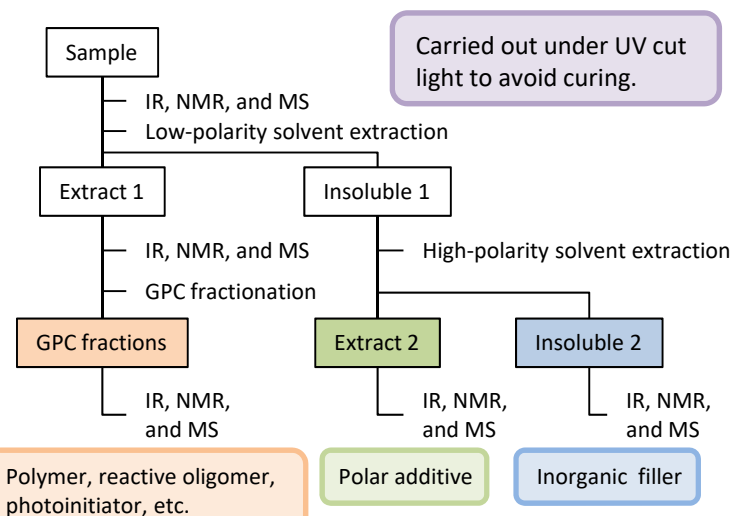


Composition analysis of UV curable adhesive

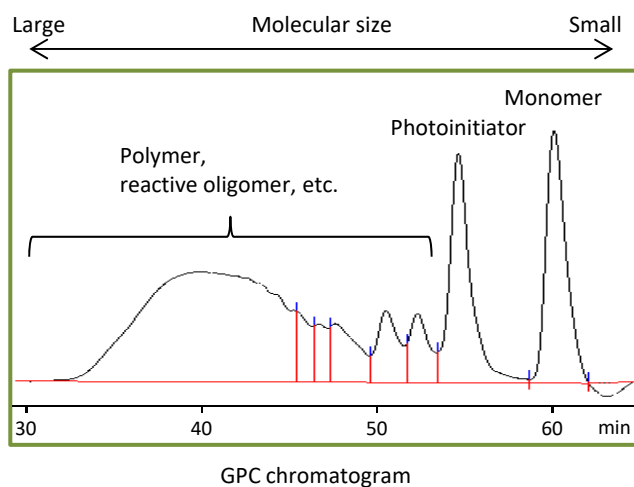
Industrial materials is generally a mixture composed of multiple components. Although it is important to know chemical structure of the components for understanding material characteristics, it is not that simple to qualify the components because there are wide variety of chemical compounds with chemical structure, molecular weight, polarity, etc. in organic materials. We can clarify the composition of such a UV curable adhesive by high level separation techniques and appropriate analytical methods to determine unknown chemicals in details.

Analytical procedure



Components can be separated by difference in polarity.

GPC fractionation



Components can be further separated by difference in molecular size.

Result of composition analysis of a UV curable adhesive

Category	Compound	Content ratio
Reactive oligomer	Urethane acrylate composed of following components: 1.) Poly(hexamethylene carbonate) diol $\left[\text{O}(\text{CH}_2)_6\text{OC} \begin{array}{c} \text{O} \\ \parallel \\ \text{O} \end{array} \text{O} \right]_n$ 2.) Isophorone diisocyanate $\begin{array}{c} \text{O} \\ \parallel \\ \text{C}-\text{N} \\ \quad \quad \\ \text{H} \quad \quad \text{CH}_2-\text{N}-\text{C} \\ \quad \quad \quad \\ \text{CH}_3 \quad \quad \text{O} \end{array}$ 3.) 2-Hydroxyethyl acrylate $\begin{array}{c} \text{CH}_2=\text{CH} \\ \\ \text{C}-\text{OCH}_2\text{CH}_2\text{O}- \\ \parallel \\ \text{O} \end{array}$	61 mass%
Monomer	Pentaerythritol tetraacrylate $\left(\begin{array}{c} \text{CH}_2=\text{CH} \\ \\ \text{C}-\text{OCH}_2-\text{C} \\ \parallel \\ \text{O} \end{array} \right)_4$	5 mass%
	Hexamethylene diacrylate $\begin{array}{c} \text{CH}_2=\text{CH} \quad \quad \quad \text{CH}=\text{CH}_2 \\ \quad \quad \quad \quad \\ \text{C}-\text{O}(\text{CH}_2)_6\text{O}-\text{C} \\ \parallel \quad \quad \quad \quad \parallel \\ \text{O} \quad \quad \quad \quad \text{O} \end{array}$	22 mass%
	<i>N,N</i> -Dimethylacrylamide $\begin{array}{c} \text{CH}_2=\text{CH} \\ \\ \text{C}-\text{N}(\text{CH}_3)_2 \\ \parallel \\ \text{O} \end{array}$	10 mass%
Photoinitiator	A certain phosphorus-containing photoinitiator	2 mass%