

Chemical resistance of ATR PRO400

3 types and 2 types of prism are available for a single reflectance ATR attachment (ATR PRO400-S) and for a multi reflectance ATR attachment (ATR PRO400-M) respectively. They are selected depending on the sample shape, the property and the measurement purpose. With solid samples, the sample shape and the measurement purpose are mainly considered. With liquid sample, its acid resistance, alkali resistance and organic solvent resistance need to be taken into consideration. The chemical resistance and the wavenumber of each prism are shown below.

ATR PRO400-S



ATR PRO400-M



	ZnSe	Ge	Diamond
Reflective index	$n < 1.7$	$n < 2.8$	$n < 1.7$
Refractive properties	Corroded with strong acid, strong alkali or diluted nitric acid	Resistant against acids and alkali. Corroded with aqua regalis and sodium peroxide. The powder becomes germania by concentrated nitric acid. It is insoluble with hydrochloric acid and it can be easily corroded with sodium hypochlorite.	No corrosion by acids and alkali.
Usable liquid	Aqueous solution with neutral pH.	Depending on kinds of acids and alkali	Usable with strong acids and strong alkali (Note 1)
Measurement wavenumber range (400-S)	15000 - 550 cm^{-1}	5500 - 700 cm^{-1}	8500 - 2500 cm^{-1} 1700 - 300 cm^{-1}

Note 1 The prism itself is resistant against strong acid and strong alkali. However, the stainless steel used for the accessory might limit the usage. Please inform us if you use strong acid and strong alkali in advance.

Note 2 All of prisms are not corroded by organic solvents chemically. However, acetone, THF, chloroform and some other solvents cannot be used with a multi reflectance ATR attachment (ATR PRO 400-M) because the o-ring to fix the prism is used. Almost all organic solvents can be used with a single reflectance ATR attachment (ATR PRO400-S).

Figure 1 shows a single beam spectrum in the measurement range of each prism.

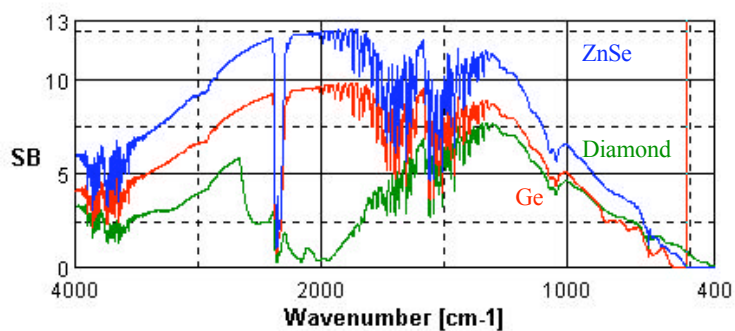


Fig. 1 SB spectra of each prism

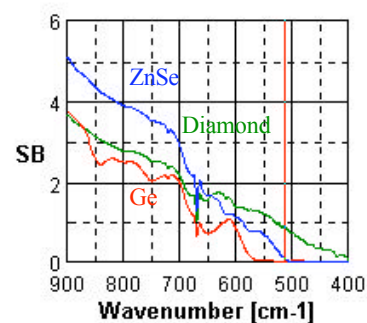


Fig. 2 Enlarged view

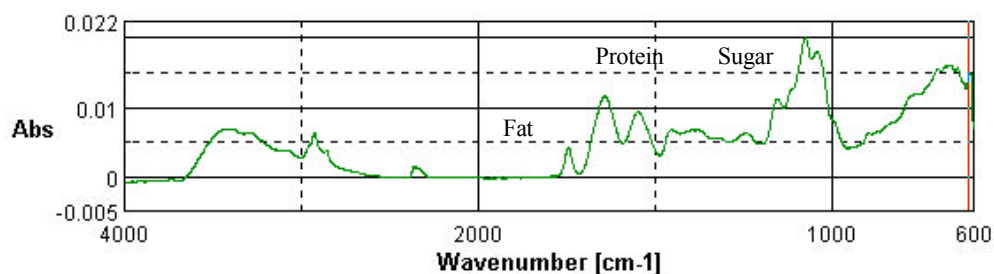


Fig. 3 Spectrum of milk using ZnSe (ATR PRO 400-S)

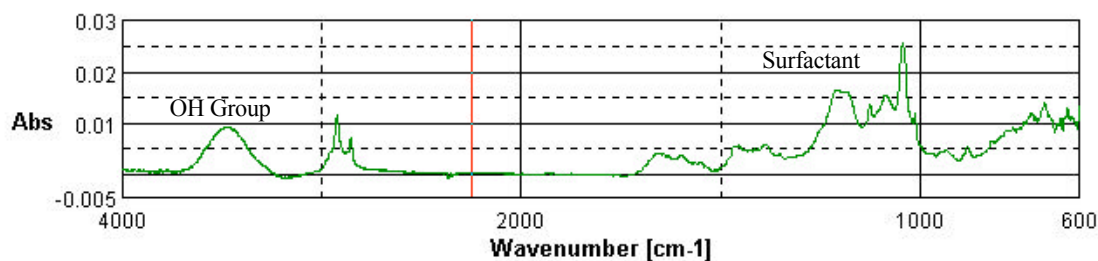


Fig. 4 Spectrum of detergent using Ge (ATR PRO 400-S)

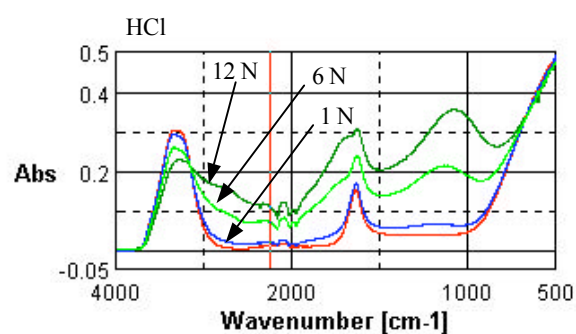
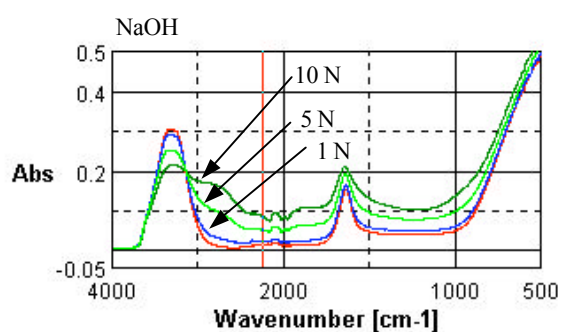


Fig. 5 Spectra of hydrochloric acid and sodium hydrate using Diamond (ATR PRO 400-S)