



AN 346

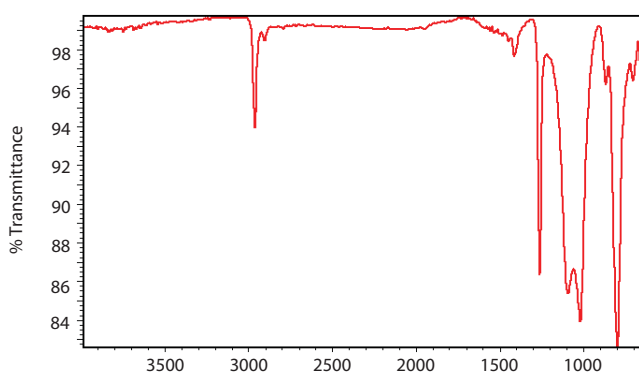
Organic Contamination on Optical Surfaces

May 7, 2007 (Version 3.0)

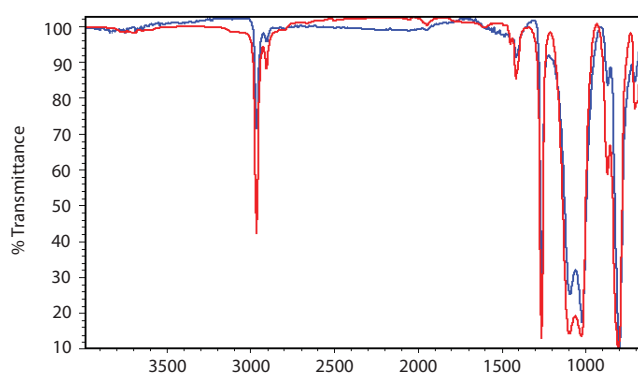
Discussion

Contamination on the surfaces of optical components decreases energy transmission, which can adversely affect component performance. The examples below illustrate just a few of the many low level contaminants that have been identified by Fourier Transform Infrared (FTIR) Spectroscopy.

A haze on a laser lens was identified as a dimethylsiloxane type silicone oil. The source was low molecular weight components from an RTV rubber.

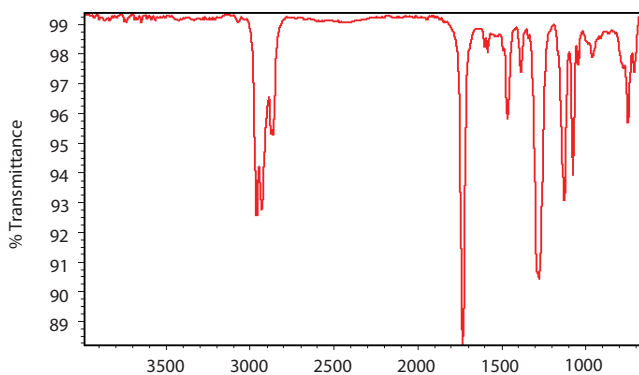
Wavenumbers (cm⁻¹)

Haze

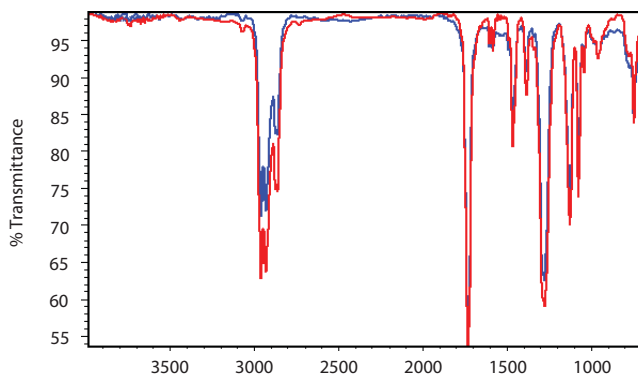
Wavenumbers (cm⁻¹)

Haze Compared with RTV components

A second haze on a lens was identified as a phthalate ester. The source was a plasticizer used in a plastic component.

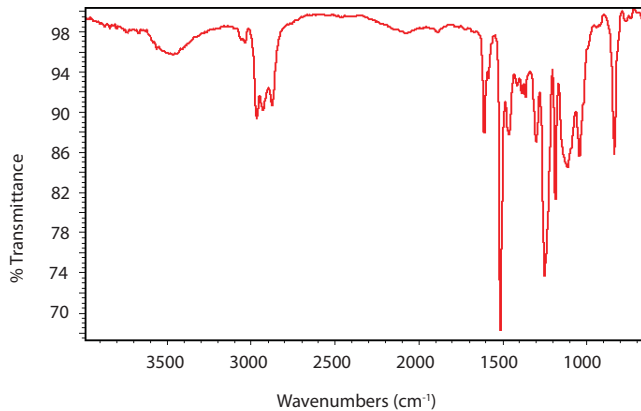
Wavenumbers (cm⁻¹)

Haze

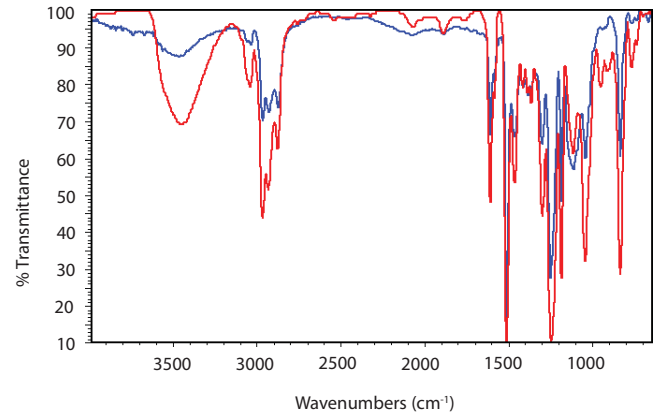
Wavenumbers (cm⁻¹)

Haze Compared with Condensed Volatiles from Plastic

A contaminant on an optical surface in a sealed optical coupler was identified as an epoxy. It matched an epoxy adhesive used in assembly of the component.

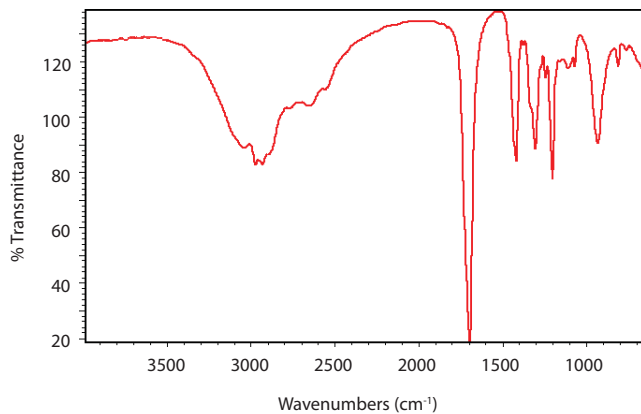


Contaminant

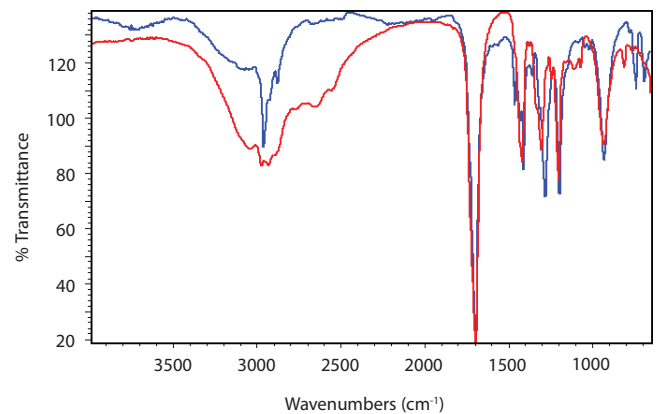


Contaminant Compared with Epoxy

A different contaminant on a similar type of optical coupler surface was identified as an organic acid that came from a solder flux used in the assembly of the component.



Contaminant



Contaminant Compared with Solder Flux

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