

# UV Fourier transform spectroscopy cross sections of benzene, toluene, and ethylenes (ortho-, meta-, and para-)

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- SUMMARY**
- ✓ WHAT? Temperature and pressure effects on the cross sections of BTX in the 3500-4100 cm<sup>-1</sup> region
  - ✓ HOW? A Fourier transform spectrometer

of BTX in the 3500-4100 cm<sup>-1</sup> region  
 BTX & BTX+air

work aims at 2  
 w (higher resolution  
 cross sections

What's the problem?

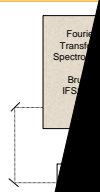
- ✓ Large disagreements exist between published cross sections
- ✓ Temperature cross sections were recorded at low resolutions

## BENZENE

## EXPERIMENTAL

### Experimental conditions

Spectral range	30000-42000 cm <sup>-1</sup>
Resolution	1.0 cm <sup>-1</sup>
Absorption path length	10 cm
Temperature	253, 263, 273, 283, 293 K
BTX pressure	0.5 - 5 hPa
Dry air pressure	5 - 55 hPa
Lamp & detector	Xe & UV diode
Co-added scans	10 x 64



### Data processing

- ✓ Blank scans recorded before and after BTX measurement
- ✓ Spectra of pure BTX at each temperature with different pressures
- ✓ Spectra of mixtures of BTX with dry air at different total pressures at each temperature
- ✓ Cross sections calculated using

$$\sigma(\nu) = \frac{1}{n_{\text{BTX}}d} \times \ln \left( \frac{(B_{\text{air}}(\nu) + B_{\text{BTX}}(\nu)) / 2}{I(\nu)} \right)$$

## TOLUENE

## ETHYLENES

