

# Online water quality monitoring and process control using UV-Vis sensors

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## RESEARCH QUESTIONS

- Why and how suspended particles in the water affect water quality measurements using online UV-Vis instruments?
- How to eliminate particle interference and obtain accurate measurements of UV254 using online UV-Vis instruments?
- Can we use UV-Vis spectra directly or indirectly for water treatment process control?

## OBJECTIVES

- Provide in-depth knowledge of the impact of suspended particles on online UV-Vis measurements.
- Develop software compensation techniques to improve online measurement.
- Develop models using spectra information to predict chemical dosing for water treatment process control.

## FINDINGS TO DATE

### Academic:

- New knowledge added in understanding the effect of particle type and concentration on UV-Vis measurements and the compensation techniques.
- A universal compensation algorithm has been developed with better accuracy compared with the generic algorithm which has suffered from undercompensated or overcompensated measurements in some cases.
- Confirmed the use of single wavelength compensation with similar accuracy compared with the multiple wavelength compensation for online instruments as built-in compensation algorithms.

### Industry:

- Simple UV-Vis instruments with a single wavelength could be employed in the field to monitor water quality.
- Chemometric models based on UV-Vis spectra can be developed into decision support tools for water treatment process control.