

## Vreeland Spectroscope



This instrument provides rapid precise qualitative analysis of all the major elements, using a unique film comparison technique. Semi-quantitative analysis is obtained by the use of "identification" and "elimination" films and special "lines of maximum sensitivity." Liquids as well as solids can be analyzed.

### **METHOD OF OPERATION**

Standard spectrograms of the elements are recorded on special transparent mylar films, built into the instrument. These are illuminated by continuous spectra generated by the electrode tips so that their lines appear in their true spectral colors. The lines of the standard and those of the corresponding element in the sample may be compared and matched side by side to give proof-positive identification. The effect is the same as if two known, pure specimens were being burned and matched against the unknown, one on either side. The comparison of the observed pattern with its master film makes the identification complete. It is like fitting a key into a lock. Each notch of the key corresponds to a tumbler of the lock. So with the spectrum. Each coincidence of a line of the spectrum with an immediately adjacent standard line is highly accurate in itself. When such coincidences are multiplied the possibility of error is eliminated.

### **APPLICATIONS**

**MINERALOGY** - The system makes possible the rapid and precise identification and quantitative evaluation of all common and most of the rare elements occurring in minerals.

**MINING** - Due to its rugged construction and simple operation it can be used right at the mine site and provide immediate analytical feedback.

**FIELD EXPLORATION** - Coupled to a suitable motor-generator it is ideal for field surveys where quick, precise checks have to be made and where expensive time-consuming analysis at headquarters is to be avoided.

**OCEANOGRAPHY** - The unit can be used on a ship and can take the rough handling and pitching to be expected. The Quantrex attachment is useable during the most difficult storm conditions.

**INORGANIC CHEMICAL ANALYSIS** - All the major inorganic elements have master films and very rapid qualitative and quantitative analysis can be obtained with the minimum of training.

**BACKUP FOR ATOMIC ABSORPTION** - A quick qualitative scan of all possible elements can be made prior to AA determination. The Quantrex attachment will determine a preliminary quantitation while avoiding the delicate complexities of the typical AA system.

**TEACHING** - Both the qualitative and quantitative features make the system ideal for introducing students to basic spectroscopy both at undergraduate and graduate levels.

**CRIME DETECTION** - The unit occupies very little space and provides rapid analysis at low cost for crime labs.