

HOT AND COLD SAMPLE HOLDER

The sample holder consists of an aluminum frame with interior cooling loop and Kanthal wound resistance heater. For electrical insulation and thermal conduction, the heater is enclosed within a boron nitride frame. The rated temperature range is -100 to 300 C. Because of thermal conduction to the sample box and ion chamber, temperatures outside of this range may damage the unit. If you decide to push the limits of the temperature range, be certain that aluminum foil reflectors are in place between the sample holder and ion chamber. As the ion chamber heats up or cools down two things may happen. The temperature coefficient of the load resistor R1 is 1000 ppm/ °C and the drift in resistance will make the zero point drift. If R1 cools down in high humidity, condensed moisture will cause it to short out. These problems may be partially compensated for by unplugging the center (white) BNC from the ion chamber body and connecting to a separate amplifier (Keithley).

The temperature may be controlled with a temperature control unit or simply with a variable transformer, reading the thermocouple with a voltmeter. In either instance

DO NOT EXCEED 35 VOLTS!!!!

applied to the heater circuit. Replacement heaters may easily be installed by disassembling the boron nitride frame and bending and clipping the new heater to fit.

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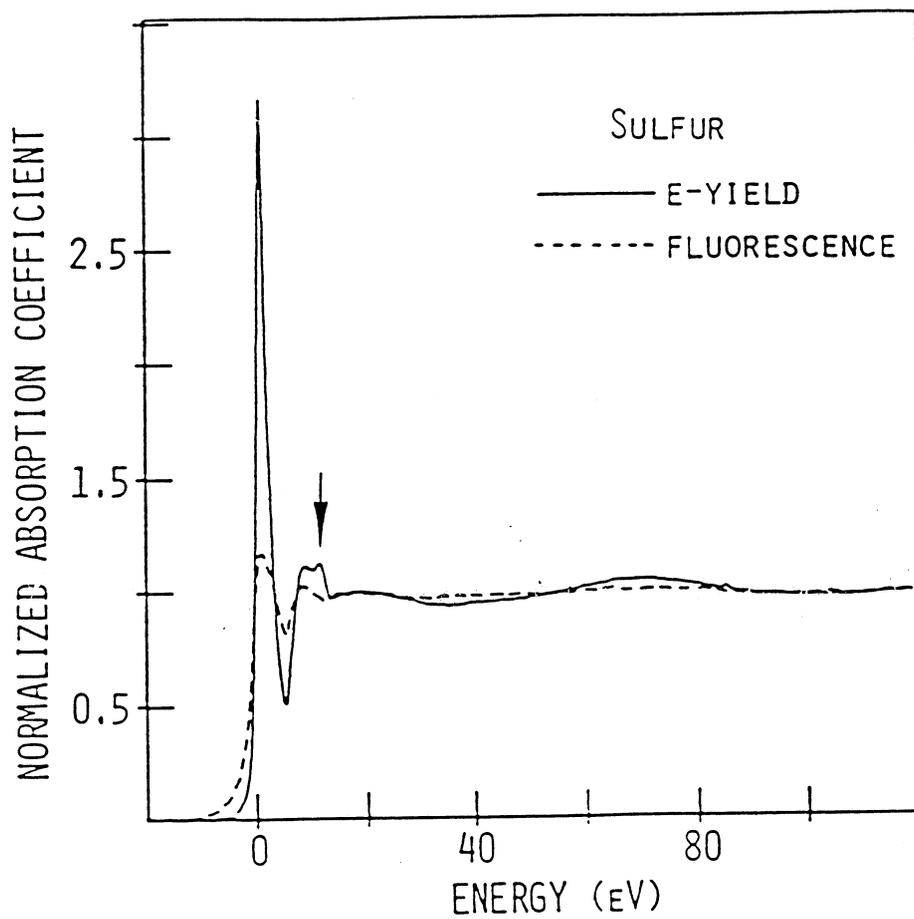


Fig. 1 Comparison of the K edge of elemental Sulfur measured in fluorescence and e-yield. The arrow indicates a surface sulfate contaminant.