March 1971

Brief 71-10047



# **AEC-NASA TECH BRIEF**

## AEC Headquarters



NASA Tech Briefs announce new technology derived from the U.S. space program. They are issued to encourage commercial application. Tech Briefs are available on a subscription basis from the National Technical Information Service, Springfield, Virginia 22151. Requests for individual copies or questions relating to the Tech Brief program may be directed to the Technology Utilization Office, NASA, Code KT, Washington, D.C. 20546.

### Rapid Analytical Determination of Glutaraldehyde Concentrations

### The problem:

To develop a rapid analytical technique for determination of concentrations of glutaraldehyde (GA) which has become an important component of fixative solutions for tissue; concentration noticeably affects the quality of fixation.

#### The solution:

A simple, rapid, and precise method for determination in aqueous solutions and in common fixative solutions for tissue; by the iodimetric procedure, addition of a known excess of bisulfite to GA is followed by titration of the unreacted bisulfite with standard  $I_3^-$ .

#### How it's done:

Concentrations of GA greater than 6% are quantitatively diluted with water or buffer to between 2 and 6%. One milliliter of such solutions and 1 ml of distilled water are pipetted into separate 125-ml glass-stoppered Erlenmeyer flasks, to each of which 20.0 ml of 0.25 M NaHSO<sub>3</sub> is delivered from a 50-ml burette. The same reaction time (5 to 10 minutes) is allowed for both the sample and the blank.

The unreacted NaHSO<sub>3</sub> in the sample and blank is titrated with standardized 0.1M  $I_3^-$ . The solution turns yellow, but within 0.2 ml of the endpoint it loses all color. Titration is continued until the solution again turns yellow and remains yellow for at least 3 minutes; the consumption of  $I_3^-$  is recorded. A carefully cleaned burette is necessary for accurate delivery of the iodine, since this solution tends to adhere to the walls.

The concentration of GA may be calculated:

 $GA(\%, w/v) = [1 (V_2 - V_1) 100.12 \times 100]/2S$  where I is the concentration of the standard  $I_3^-$  in moles per milliliter,  $V_2$  is the volume (milliliters) of iodine used in the blank titration,  $V_1$  is the volume (milliliters) used in the sample titration, 100.12 is the molecular weight of GA, and S is the sample's volume. When S is the sample's weight, the percentage is w/w.

#### Notes:

- This information may interest microscopists, foodresearch, biochemical, or medical laboratories, or drug manufacturers.
- 2. Requests for further information may be directed to:

Technology Utilization Officer Division of Technical Information AEC Headquarters Washington, D.C. 20545 Reference: B71-10047

#### Patent status:

Inquiries about obtaining rights for the commercial use of this invention may be made to:

Technology Utilization Officer Division of Technical Information AEC Headquarters Washington, D.C. 20545

> Source: N. A. Frigerio and M. H. Shaw Biological and Medical Research Division (ARG-10413)

> > Category 05