

Laboratory for Radiation Protection, INRNE-BAS

Fields of activities

1. Personal dosimetry

2. Environmental radiation monitoring:

- Analysis of environmental samples using radiochemical and/or instrumental techniques;**
- Monitoring of the cosmic and terrestrial background radiation.**

3. Research in the field of thermoluminescence dosimetry;

4. Research in the field of radon dosimetry

Laboratory for Radiation Protection, INRNE-BAS

Historical background, development dynamics

- **The Laboratory for Radiation Protection (LRP) succeeded in 2001 the Laboratory of Radiation Dosimetry (LRD), created for radiation control around the Nuclear Research Reactor IT-2000 in Sofia one year before the start of the reactor in 1961.**
- **Now the monitoring covers the areas of INRNE (including the area of IT-2000), the area of the National Radioactive Waste Repository Site in Novi Khan and 2 referent sites (at the mountain Vitosha near Sofia and at BEO Moussala).**
- **Traditionally research in the field of thermoluminescence dosimetry is made in the LDR and since 1982 a gamma-background monitoring was introduced in the control programme by means of TLDs from $\text{CaSO}_4:\text{Dy}$, developed in the Laboratory.**

Laboratory for Radiation Protection, INRNE-BAS

- **Since 2000 LRPC performs the personal dosimetry control at INRNE by means of TLDs.**
- **Since February 2004 LRPC is a part of the quality management system at INRNE, according to Standards ISO 9001/2000 and ISO 14000**
- **12 collaborators – 4 chemists, 4 physicists, 3 engineers and 1 medical doctor..**

Laboratory for Radiation Protection, INRNE-BAS

NETWORKING - scale INRNE

BEO MOUSSALA

LRP

- LOW LEVEL β COUNTING
- α SPECTROMETRY
- γ BACKGROUND MEASUREMENTS

RAMLAB

- γ SPECTROMETRY
- α SPECTROMETRY
- LOW LEVEL β COUNTING

RAW REPOSITORY

- γ SPECTROMETRY
- LIQUID SCINTILATION COUNTING

LABORATORY NG

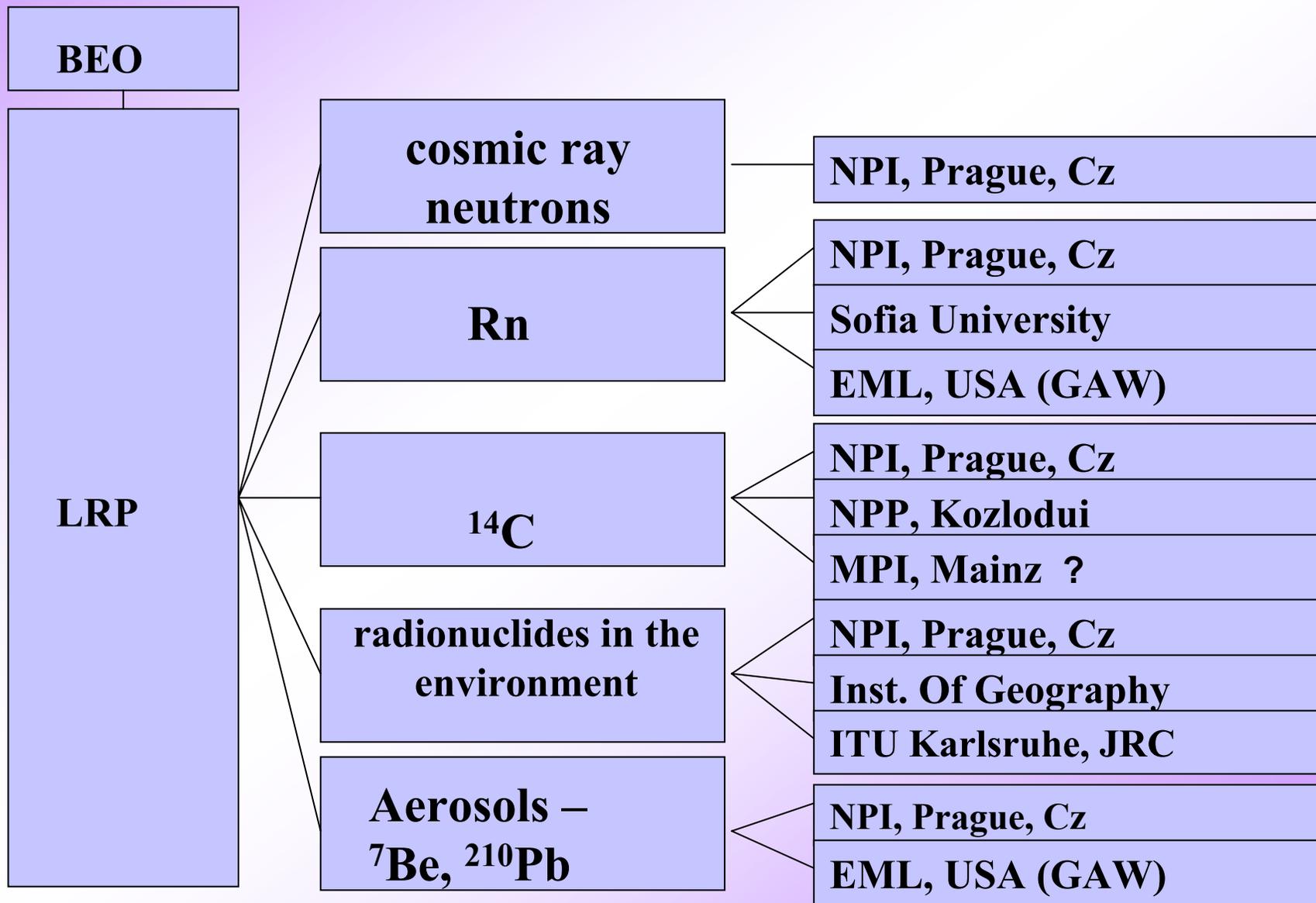
- AEROSOL SAMPLING
- γ SPECTROMETRY

LABORATORY XRFA

- X-RAY FLUORESCENCE ANALYSIS
OF HEAVY METALS AND TOXIC ELEMENTS

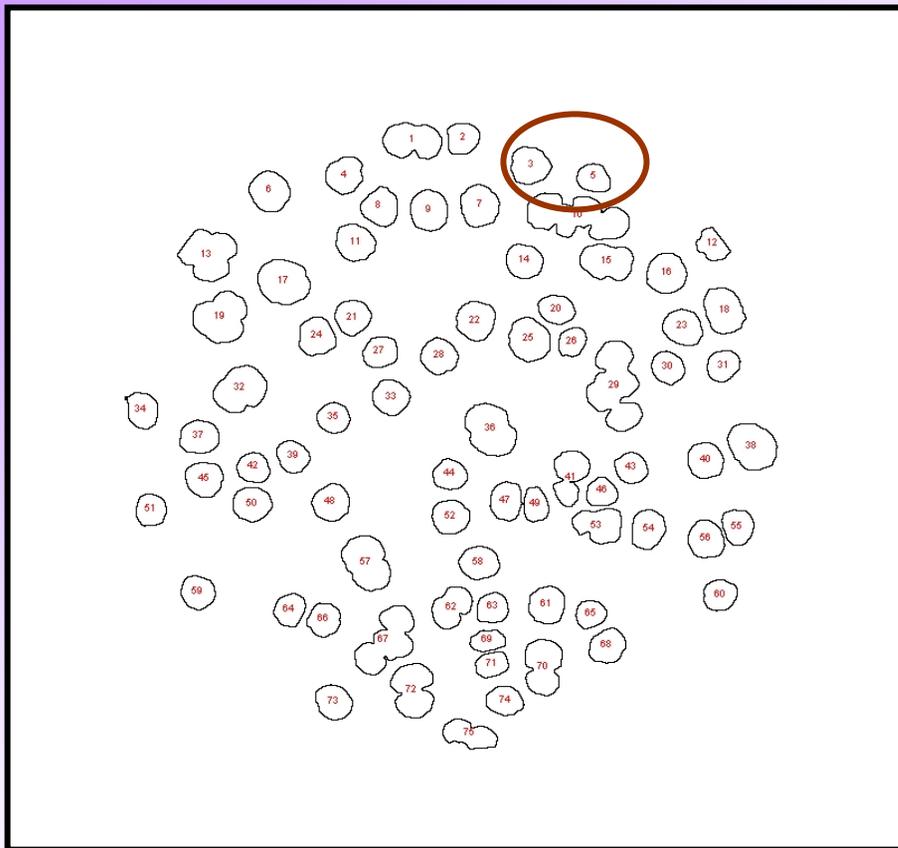
Laboratory for Radiation Protection, INRNE-BAS

NETWORKING - scale BEO Integrated Environmental Centre



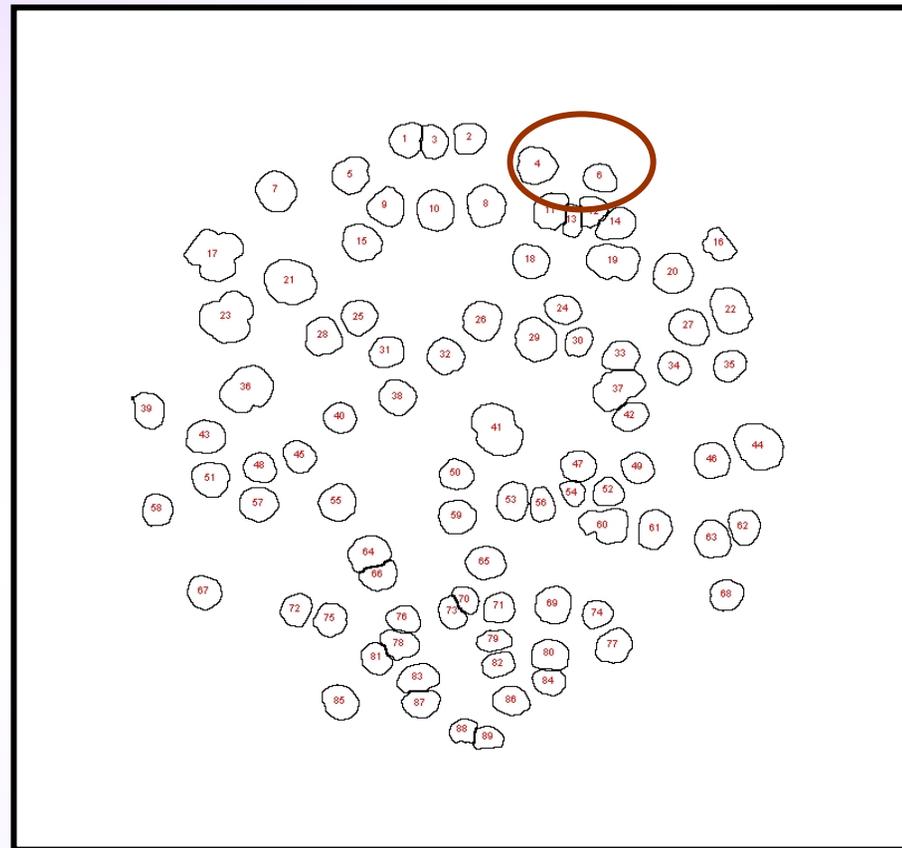






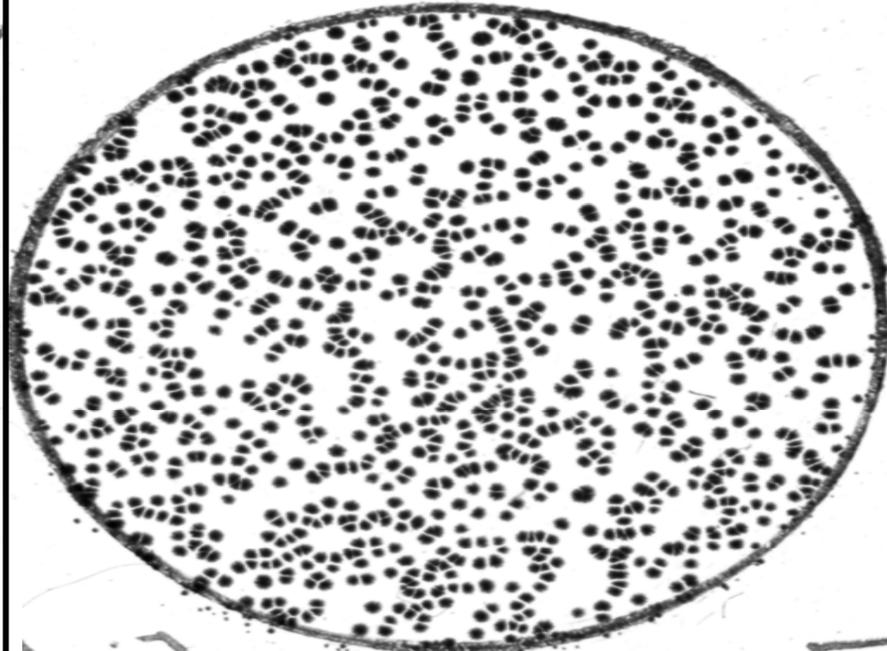
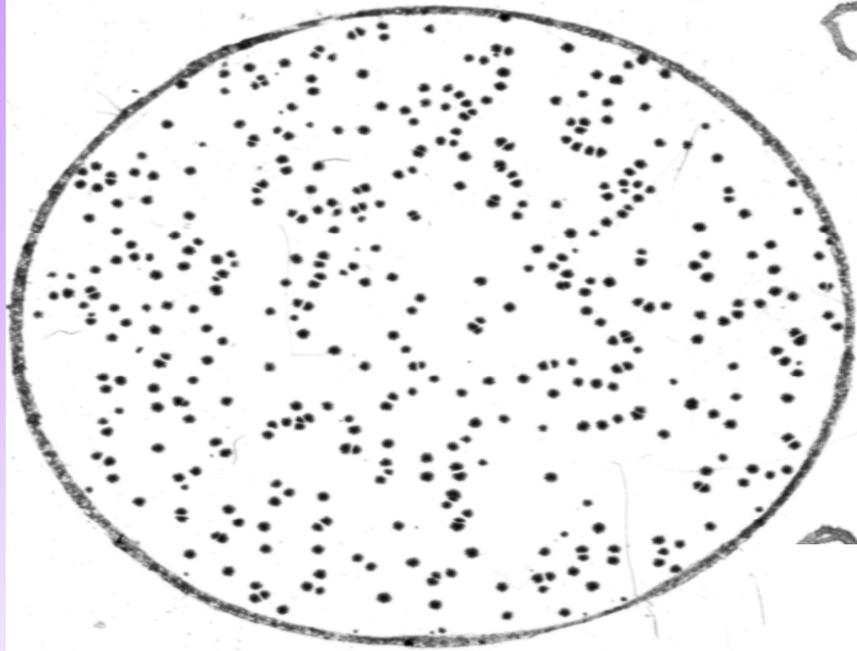
Without watershed

75 counts



After watershed separation

89 counts

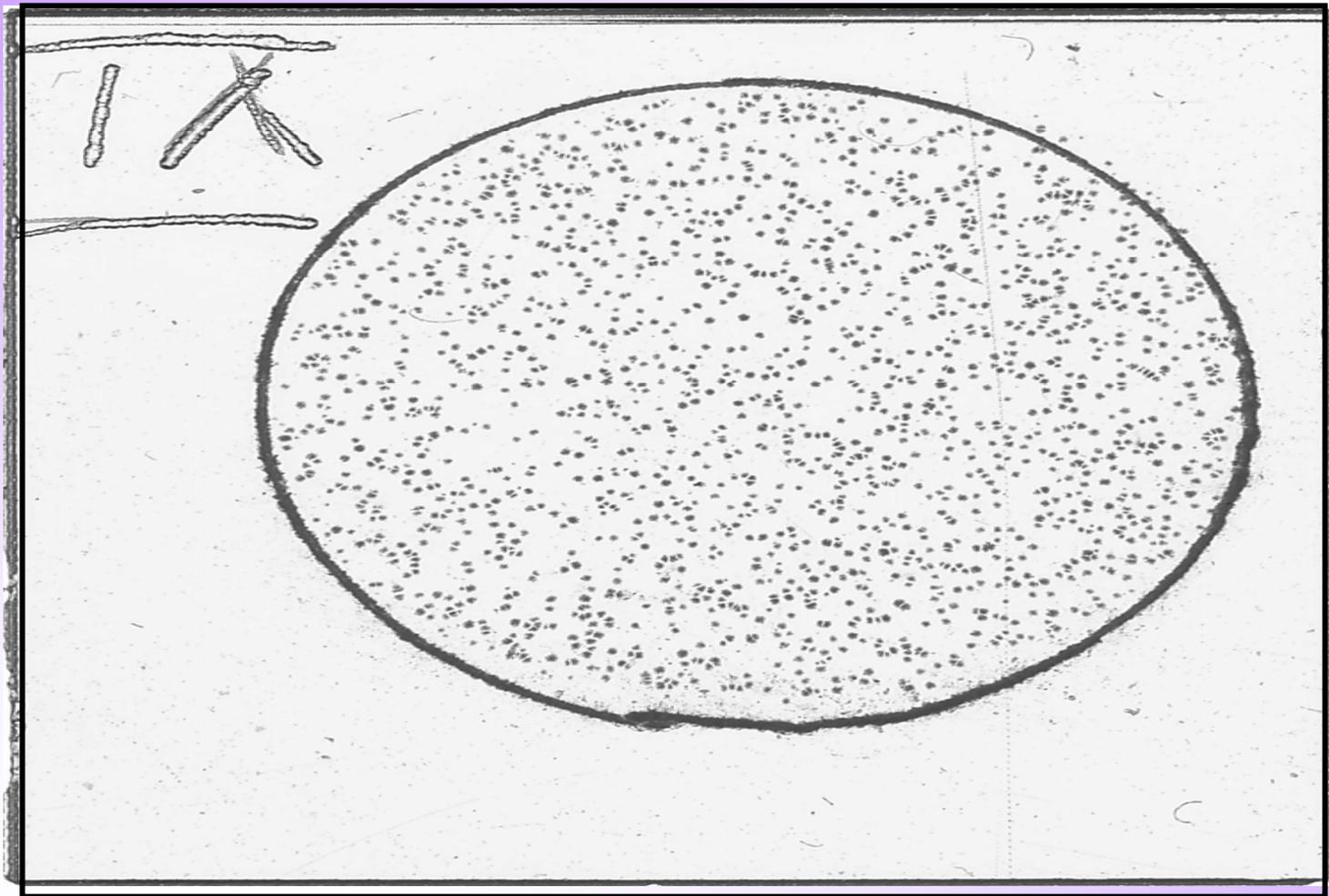


Automatic Particle counting: 411counts

Manual Counting: 411 counts

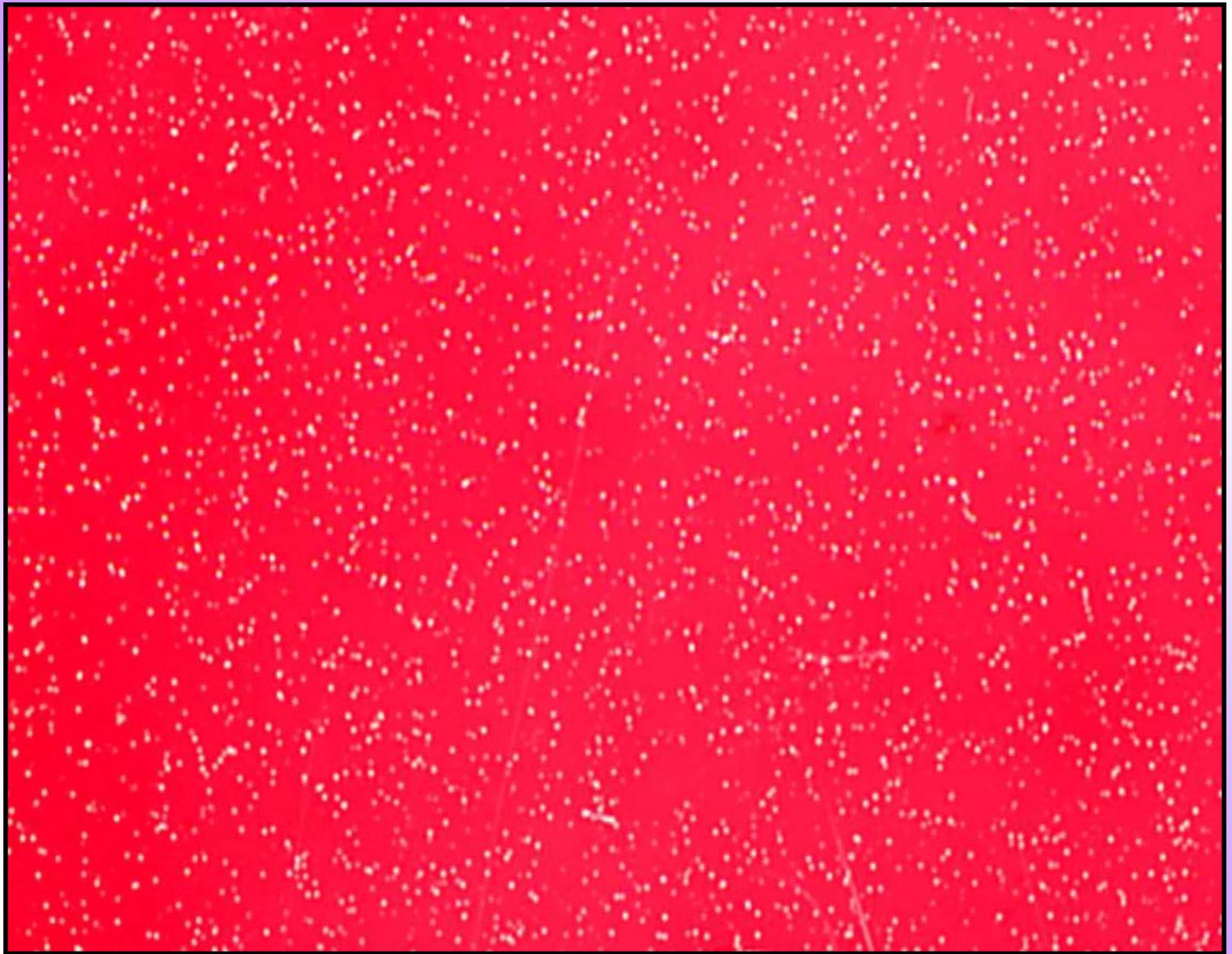
Automatic Particle counting: 1064 counts

Manual Counting: 1140 counts

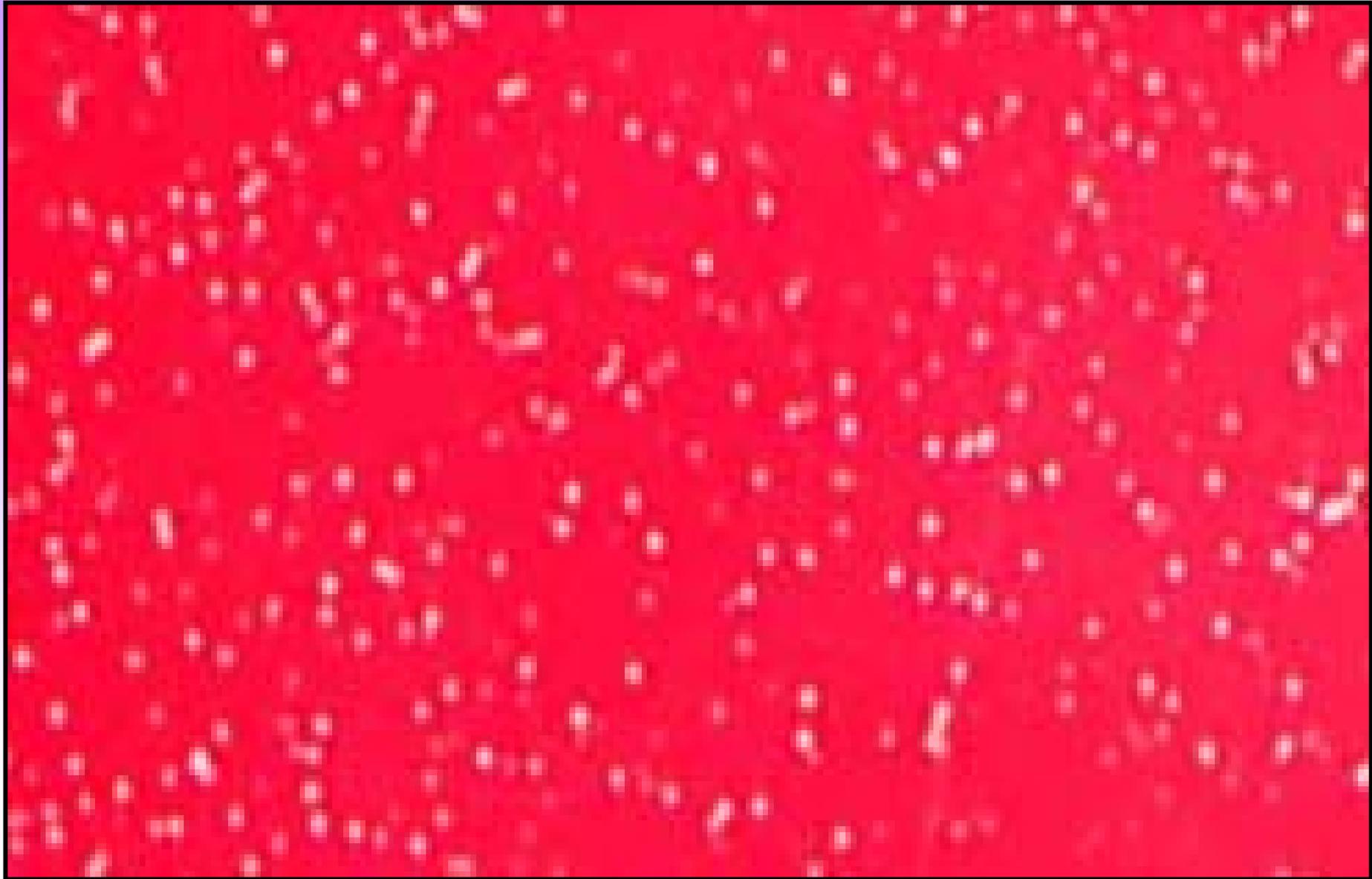


CR 39 scanned at 4800 dpi





LR-115 scanned at 4800 dpi



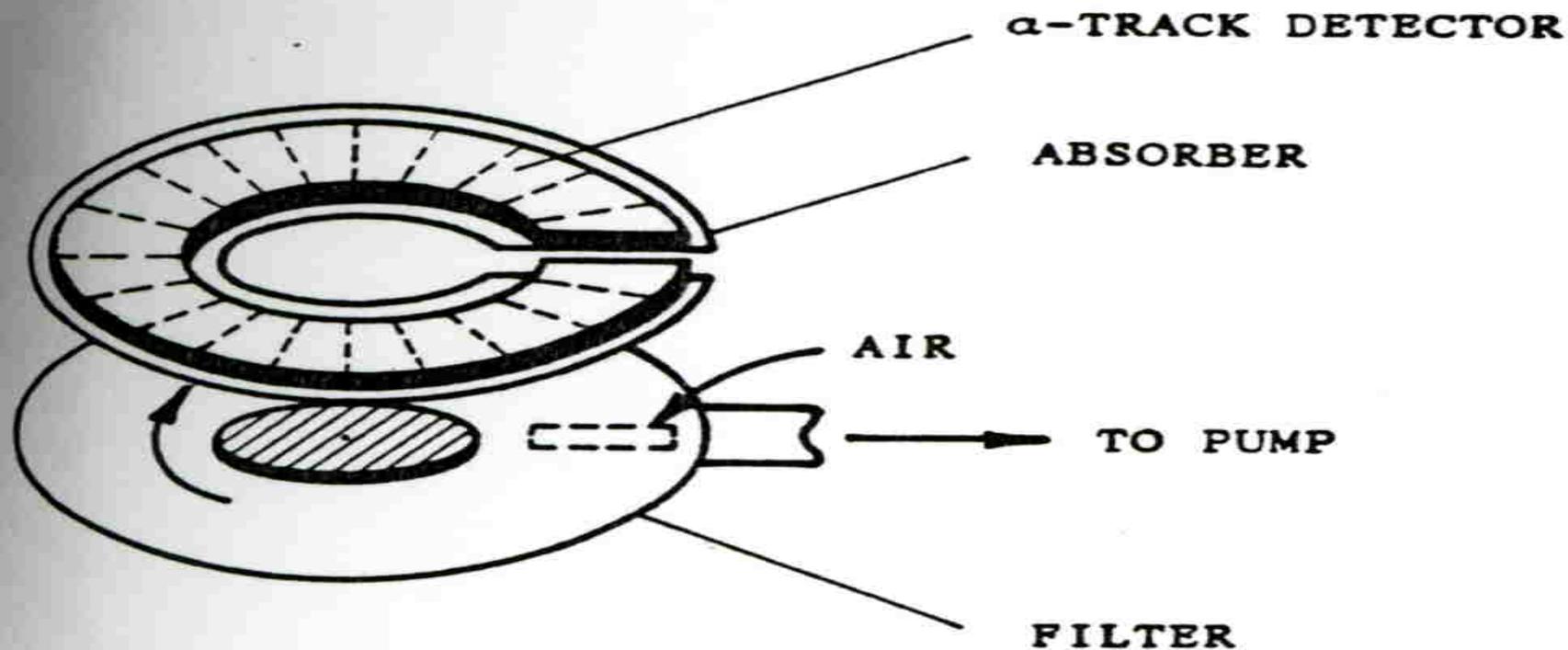


Fig. 1. A principal scheme of the dosemeter used. Each point of the uniformly rotating filter consecutively passes by the inlet nozzle and the different sectors (each considered a separate detector) of LR 115-II film. The film is covered with 11.7 mg cm^{-2} -thick aluminum absorber.

