(Fe_3O_4) that follows from the analysis. The formation of non-magnetic iron oxide Fe_2O_3(c) in the condensed phase performs by an increase in the mass fraction of air from 65 to 70 % (b).

For the process of plasma, utilization of the spent nuclear fuel in air plasma by taking into account the obtained results the following optimal regimes can be recommended:

- operating temperature range (1500 ± 100) K;
- composition of WONS-1 (65 % SNF RW : 35 % acetone);
- mass ratio of phases (65 % air : 35 % WONS).

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SOFTWARE MONITORING OF CHEMICALS CONSUMPTION AT THE RESEARCH LABORATORY

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Chemicals are substances that are used in chemical and medical laboratories for processing analyses and syntheses. Those compounds are organic and non-organic substances, analytical reagents, dissolvers, and indicators of various hazard classes. All of the reagents must be strictly accounted for and stored as required by safety rules.

In laboratories, an accounting file for any material must be kept on interdisciplinary form No. M-17 and contain a vast amount of information about each component, including: the entry's date, the number of the document, the entry's sequence number, the name of the recipient or the person to whom the reagent is dispensed, income and expanse, signature and more.

Research laboratories handle a large number of chemicals on a regular basis, and each requires a manual entry, which is a labor-intensive and time-consuming process.

The aim of this work is a development of chemical accounting software package for educational institutions' research laboratories using mobile and computer applications.

The first step of development was to create a digital log of reagents' income and expenses with the ability to make a formatted data output on the following terms: month\day, the surname of the person who made an entry, the reagent's name, and the reason for making an entry.

An entry in the digital log is made via the Android smartphone's camera. The individual code (e. g., barcode or QR-code) placed on the package, which contains a reagent, is read and the obtained data, complemented with the text message about volume or mass of the taken reagent, is transferred to the VK application, which transmits accumulated data to the PC and, as a result, an entry about the change in amount of the reagent is made [1].

Thus, the digital log consists of two parts: VK messages processor and the log itself. The code (Fig. 1) below, implemented in the Python 3.7.0 programming language, illustrates how an entry is formed for logging.

The log is formed and displayed as a table in the graphical shell, developed in Python 3.7.0 with built-in API Tkinter [2, 3]. The program provides an option to sample data by certain terms: DD/MM/YY-HH:MM-FULL NAME-REAGENT NAME(g, ml)-REASON (e.g., 03/01/2022-13:12-Ivanov Ivan Ivanovich-NaOH(sodium hydroxide)-10-Lab1), where DD stands for days, MM – months or minutes, YY – years, HH – hours, REASON – task type,

```
for ID in users: #forming an entry
    for line in data[ID]:

        ext = ""

        clock = time[ID][data[ID].index(line)]
        USER = vk.method("users.get", {"user_ids":ID})[0] # getting user's ID
        USER = "%s %s" % (USER['first_name'], USER['last_name'])
        line = line.split(" ")

        matter_left = how_much_left[base[line[0]][:base[line[0]].index("(")]]

        line[2] = line[2].upper()
        if len(line[2]) == 1:
            if line[2] == "П": sight = "ПРИХОД"

        else:
            if line[2][0] == "Л":
                if line[2][1:].isdigit():
                    sight = "ЛАБОРАТОРНАЯ №%s" % line[2][1:]
                else:
                    sight = line[2]
```

Fig. 1. *Part of the code, which is forming an entry for logging*

for which this reagent was taken, or adding newly arrived reagents as a result of a purchase, transfer, or exchange.

Implementation of this solution in practice would have a positive effect on the efficiency of chemical accounting for at least two reasons: the information input speed and its correctness.

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INTERPRETATION OF OLD CHEMICAL IMAGES

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Introduction

With the continuous development of communication, computer, automation and other technologies, machine learning algorithms represented by deep learning have been widely used in image recognition, speech recognition, natural language processing, and other fields. The chemical information contained in scientific literature and network plays an important role in molecular structure retrieval and new drugs design.

Researchers use ChemDraw, ChemSketch, and other chemical mapping software to manually draw chemical structure images in the literature. On the other side, deep learning algorithms are used to automatically convert chemical structure images in the literature into InChI, SDF, which can be recognized by computers.

Unfortunately, a lot of data sets provided to the public are very small. This does not allow machine models to interpret them. In addition, images from the past do have a lot of corruption that leads