# 5. International Mediterranean Scientific Research Congress

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# PROCEEDINGS BOOK


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ISBN: 978-1-955094-92-4



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**30.01.2024**

**by Liberty Academic Publishers**

**New York, USA**



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# MODIFIER FOR ION EXCHANGE COLUMNS THAT CAN BE USED TO STUDY THE EFFECT OF A MAGNETIC FIELD ON THE PROCESS OF CORRECTING THE MINERAL COMPOSITION OF NATURAL AND WASTE WATER

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**ABSTRACT**

The magnetic circuit body 1 of the modifier is made of magnetically soft steel and is divided into two parts by conductive ferrite-magnetic gaskets 2. In the middle, there is a cylinder 3 made of insulating non-magnetic material on which the magnetising coil 4 of the electromagnetic system is mounted. Electrodes 5 are mounted in a circle on the upper and lower magnetic circuits with alternating polarity. The number of electrodes and their dimensions should be optimized based on the device's performance and the desired concentration of the saturated solution. This concentration can be determined through appropriate calculations.

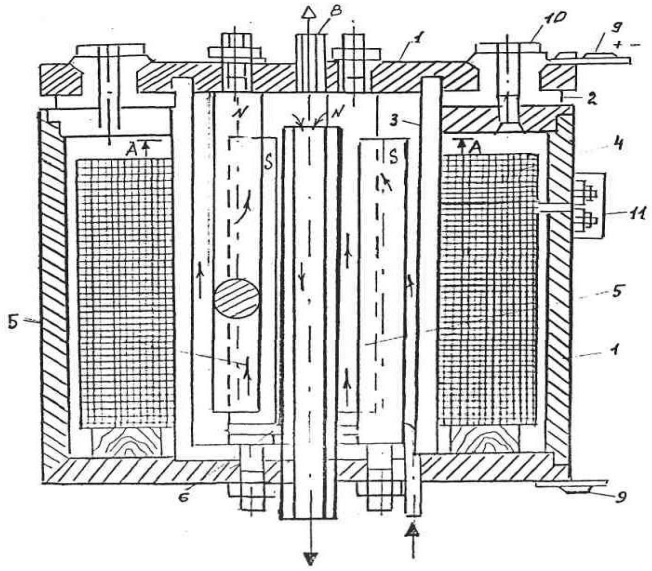


Fig. 1. Schematic diagram of the reagent modifier

The device is fitted with a distribution system (6) that uniformly supplies liquid to the nozzles (7). The nozzles are arranged in a manner that creates an air space between the body and other electrodes to collect hydrogen. The hydrogen is then released through a pipe (8) outside the room via a dielectric hose. Terminals (9) are connected to the upper and lower parts of the magnetic circuit to supply the electrodes with direct current. The magnetic circuit is secured by bolts (10) with dielectric seals. The magnetising coil terminal box 11 is mounted on the magnetic circuit body to connect wires from the DC rectifier.

The device operates as follows: the solution enters through the uniform liquid supply distribution system 6, flows between the electrodes 5, and is exposed to the magnetic field generated by the electromagnetic coil 4 and the direct current passing between the electrodes. Electrolysis and the presence of a magnetic field result in the intensive saturation of iron hydroxide in the treated solution, leading to the formation of enlarged flocs. These flocs are essential in the process of flocculating contaminants in the treated liquid. The waste liquid is discharged through pipe 7, while the hydrogen produced during electrolysis is discharged through pipe 8.