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Design and Use of a Microdischarge of Argon in a Liquids GERARDO RUIZ VARGAS, ANTONIO JUÁREZ REYES, UNAM — We have designed and implemented a pulsed micro-plasma of Argon with a liquid electrode. The system allows to detect metallic compounds dissolved in water. The microplasma is used as a source of excitation source and the discharge operates at atmospheric pressure according to the Paschen law. Coupling a CCD monochromator of our design to the microplasma source with liquid electrode, we are able to carry out emission spectroscopy of the excited species present in the sample. For the proof of concept test of this instrument we used a dissolved solution, in the milli-mol range of $HgCl_2$ which is one of the water soluble forms of mercury. This experimental setup is able to detect lower concentrations of Hg in the range of 10mili-mol. This device is designed to be placed on a sample of water and perform in situ measurement. We design a chamber in which the micro-electrodes are connected to a ventury. The pressure drop in the ventury is achieved with the flow of Argon. With this arrange it is possible to carry the water from a container to inside de chamber into the space between two electrodes. One of these electrodes is submerged in water (liquid electrode) and the other exposed to Argon. Mercury has very intense peaks in 253.65nm and 435.8nm, and less intense in 365.01nm and 546.07nm. Argon, the drag gas and discharge gas, emits an intense peak at 350nm. Two emission peaks in mercury at 253.65nm and 440nm are visible with our arrangement. From the intensity of the emission lines it is possible to determine their concentration in water.

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