Therefore, on the one hand there is a general market demand in the ultrapure water production, in particular for semiconductor use, to have less and less contact between the water and metals and their alloys (e.g. steel) in the Polishing steps of this ultrapure water production. On the other hand, there is need for an improved apparatus for providing ultrapure water, which overcomes drawbacks of the presently known apparatus. In particular, there is a need to find an apparatus which reduces the high space requirement of apparatuses known from the prior art.

To overcome these drawbacks and to fulfil these needs the invention provides an apparatus for providing ultrapure water, in particular ultrapure water for use in semiconductor fabrication with the features of claim 1. Preferred embodiments of the inventive apparatus are defined in the claims dependent from claim 1.

The wording of all claims is hereby explicitly incorporated into this description by reference.

According to the invention, an apparatus mentioned above comprises at least one cylindrical reactor with an inner cylindrical shell, an outer cylindrical shell and a channel-like volume between inner shell and outer shell. Said inner cylindrical shell houses at least one UV emission device. Said outer cylindrical shell comprises at least one means for reflecting UV radiation. And said channel-like volume is provided for flowing water through the reactor.

In other words: the inventive apparatus comprises two tubes or pipes which are arranged concentrically. Due to this arrangement a space between the two tubes/pipes is formed which has an annular cross-sectional area. The at least one UV emission device is arranged within the inner tube/pipe. The water flows through the space between inner tube/pipe and outer tube/pipe. The outer tube/pipe comprises the at least one means for reflecting UV radiation.

As already explained above, the term “ultrapure water” (UPW) is water that has been purified to very strict specifications. This water should by definition contain only H_20, and H^+ ions and OH ions in equilibrium. As also already mentioned, ultrapure water is mainly used in the semiconductor industry, and also in the pharmaceutical industry, possibly at a lower purity grade.