CLAIMS

1. A method for analysing trace metal impurities in the surface of a silicon wafer 2, comprising etching a surface of the silicon wafer 2 which is lying on a rotatable plate 3 in an etching chamber 1, the etching chamber 1 consisting of a bottom 1a, above which the rotatable plate 3, is located, a cover 1b which fits to the bottom 1b, at least one exhaust opening 7 in the cover or between the lower edge of the cover 1b and the bottom 1a, respectively, allowing the emission of for instance gaseous reaction products out of the chamber, and a valve or nozzle 5 located beside the rotatable plate 3 whereby an opening 5a of the nozzle or valve 5 also located beside the rotatable plate is not directed into the direction of the silicon wafer 2 and not directed to the exhaust opening 7, introducing as an etching gas a mixture of HF and 0_3 into the etching chamber 1 through the opening 5a of the nozzle or valve 5 and then drying the etched surface of the silicon wafer 2 with nitrogen gas introduced through a nozzle or valve 6, wherein the rotatable plate 3 with the silicon wafer 2 lying on the rotatable plate 3 is rotated during etching and drying, a scanning step with a liquid droplet moved over the etched and dried surface of the silicon wafer thereby dissolving and collecting into said droplet metal ions and a step of analyzing the liquid droplet for trace metals.

2. The method as claimed in claim 1, wherein the opening 5a of the nozzle or valve 5 is directed either to the top 1d or to the side wall 1c, so that the etching gas is not directed directly to the silicon wafer 2.

3. The method as claimed in claim 1 or claim 2, wherein the time for introducing the etching gas into the etching chamber 1 is between 3 and 60 seconds.

4. The method as claimed in any of claim 1 to claim 3, wherein the rotatable plate 3 can be cooled or heated.

5. The method as claimed in any of claim 1 to claim 4, wherein the rotatable plate 3 is rotated with a rotation speed of 5 to 15 rpm during the etching process.

6. The method as claimed in any of claims 1 to claim 5, wherein the etching process is repeated as often as the desired removal rate is obtained.

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7. The method as claimed in any of claims 1 to claim 6, comprising a hydrophobizing step with HF gas prior to the scanning step to make the etched and dried surface of the silicon wafer 2 hydrophobic.