Reviewer 1The paper describes a seemingly refined method for data and image processing in STM. Using a neuronal network image artefacts (global as well as two kinds of local noise) should be identified, classified and restored by “global restoration algorithms”. The whole procedure is intended to run automatically – i.e. without any notification or influence of the user. This sounds interesting and even promising. But – at least for me – there arise first of all two basic questions:· Is there a real demand for such a type of procedure? Contemporary STM instruments working in the proper environment and operated by suitably trained and skilled personal do practically not any more produce such type of artefacts. Especially the global noise level is usually very small. STM images are published nowadays mostly as raw data (may be, sometimes gently polished by a low-pass filtering). Appearing of “local noise”, on the other hand, has often real physical reasons (e.g. a specific feature on the surface as a cluster, a molecule or something else might be for some reason less tightly bound to the substrate than others or possessing a less stable internal configuration or interacting in a different way with the probing tip). Such real features in the raw data are sometimes very important findings and should never be “automatically” removed.这种类型的手术真的有需求吗?当代的STM仪器在适当的环境下工作，由经过适当培训和熟练的人员操作，实际上不再生产这类人工制品。特别是全球的噪音水平通常非常小。STM图像现在主要以原始数据的形式发布(有时可能经过低通滤波进行轻微的抛光)。当地出现噪音,另一方面,往往真实的物理原因(如特定的表面特性作为一个集群,一个分子或其他可能因为某些原因比其他人少紧密地绑定到衬底或拥有一个更不稳定的内部交互配置或以不同的方式探索技巧)。这些原始数据中的真实特征有时是非常重要的发现，不应该被自动删除。

· The authors should at least mention the very high importance and necessity of a separate storage of the real raw data as the original data. These are always the only basic data to be considered and discussed. Especially critical seems to be the effect which is inherent in the use of neuronal networks that there is no way to retrace what actually did happen to the original data after the particular processing. “Automation” of scientific work in such a way is in contradiction to good scientific practice and might endanger the user to be blamed for scientific misconduct.It might be, that possible applications of the method could be found in routine imaging e.g. in industrial processes as quality control but I cannot imagine and would even not tolerate the application in basic research. In any case, the authors should give a very clear statement on these items.作者至少应该提到将真正的原始数据作为原始数据单独存储的重要性和必要性。这些总是需要考虑和讨论的基本数据。特别重要的似乎是神经元网络使用中固有的效应，即在特定处理之后，无法追溯原始数据实际发生了什么。以这种方式进行科学工作的自动化与良好的科学实践相矛盾，可能会危及因科学不端行为而受到指责的用户。可能的情况是，该方法可以应用于日常成像，例如在工业过程中作为质量控制，但我无法想象，甚至不会容忍在基础研究中的应用。无论如何，作者应就这些项目作出非常明确的说明。

Besides of these basic points, the paper contains a few further shortcomings:· STM has not been introduced by J.Tersoff (who is a theoretician) but by G.Binnig and H.Rohrer (both of them were awarded by the Nobel price in physics 1986 for the invention of the STM). Suitable references are also missing in the following (this refers to [1-7] which are all not the groundbreaking papers as which they are announced here).· The description of the defect classification networks (2.2.1. … 2.2.3.) is not very helpful (even obscure) for an outsider. The referee understands the inherent problem with this for any type of neuronal network. Nevertheless the authors should try to explain better why these different versions are just well adapted to the particular defects.· The rule (1) looks strange. It is not satisfying to refer just to “prior experience”, especially if this kind of hierarchy seems to influence on the output.· What is meant by “positiv0e and negative samples” in 3.1.?已经修改在文中

· Several symbols have to be explained (e.g. “Chl” in (A4,)).· It is unusual to have “formula” which contain whole words as well as symbols ((1), (3), (4)).· The references and the spelling of author names have to be rechecked carefully (e.g. [11], [12]) as well as misspellings have to be removed (e.g. “resored image” in Fig.6). The term “et al.” should not be used in the reference list – each author and coauthor deserves to be announced by his name.· The English has to be improved considerably (e.g. plural forms are missing almost throughout the whole paper).Reviewer 2The manuscript presents some interesting ideas on the validation of STM images. The English is not adequate for presentation in Micron and must be carefully revised before publication.