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The role of micro-NRA and micro-PIXE in carbon mapping of organic tissues

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This study reports the work developed in order to implement the micro-NRA technique in the microprobe line of the Ion Implantation Laboratory, thus allowing to obtain elemental maps of light elements in organic tissues. In particular, the work was focused on nuclear reactions employing protons with carbon. The results obtained with the micro-NRA technique are compared with those obtained with micro-PIXE employing a SDD detector equipped with an ultra-thin window. The results show that although the use of NRA for carbon at 1.75 MeV resonance is feasible, it does not compete with the direct measurement of carbon X-rays. A comparison of elemental maps obtained by PIXE and by NRA in different samples indicates that PIXE provides better statistics and elemental maps of higher quality.