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Progress of Positive Ion Mass Spectrometry Based on 2.45 GHz Electron Cyclotron Resonance Ion Source

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Radiocarbon measurement technology has significant applications in archaeology, earth science, environmental science, biomedicine and so on, especially in radioactive dating, climate change, nuclear analysis, pharmacokinetics. The traditional ^{14}C accelerator mass spectrometer (^{14}C -AMS) based on tandem is much expensive and complex to maintain and operation. It is urgent to develop a new type carbon ion mass spectrometer. ^{14}C Positive Ion Mass Spectrometry (^{14}C -PIMS), that based on positive and negative ion conversion (C^{2+} - C^{-}), will be a low cost, compact equipment, which can be a potential new method. Recently, ^{14}C -PIMS studies on C^{2+} producing and C^{2+} - C^{-} charge exchanging have been carried out at Peking University (PKU). Based on a 2.45 GHz ECR ion source, a desired C^{2+} beam was obtained. Simultaneously, a 6% C^{2+} to C^{-} charge exchanging efficiency was achieved. Next step, attention will be paid on the development of specialized, miniaturized, maneuverable, automated ^{14}C -PIMS equipment based on 2.45 GHz ECR ion source (PKU-PIMS).

Student Submission

No

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