Fragment Determination in Selective Bond Dissociation of N-methylformamide

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Abstract

In our previous work, we found that N-methylformamide is with highly selective bond dissociation under irradiation at carbon, oxygen, and nitrogen K-edge. Some masses of ionic fragments show great improvement in branching ratio as we tuning the input X-ray irradiation to K-edge absorption peaks.

For further investigation, we hope to tell apart the fragments with same mass-charge ratio, and determine the absorption spectra of specific fragments in branching ratio. To achieve this goal, we use two kinds of isotopically substituted samples: N-methylformamide-1-^{13}C, and N-methylformamide-D_5. By comparing the mass spectra of these isotopically substituted samples, we can calculate the branching ratio of each dissociation path, and estimate the property of selective dissociation of N-methylformamide.

Keywords: Near edge x-ray absorption fine structure (NEXAFS), core excitation, selective bond dissociation