The results indicate that the NO_2 molecule prefers a parallel orientation relative to the graphite planes and that this behavior is clear even at temperatures as high as 240K.

REFERENCE:

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ORIENTATION OF NITRATE MOLECULES IN GRAPHITE-HNO_3 RESIDUE COMPOUNDS

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Using nuclear resonance fluorescence of 6.324 MeV photons from ^{15}N, we showed that in the 3rd stage graphite-HNO_3 residue compounds (characterized by a distance I_3 = 13.25 Å), the intercalant molecules are in the form of nitrates and are oriented at $\theta_o = 15 \pm 5^o$ to the graphite planes. The procedure for preparing and characterizing thick residue samples using highly oriented pyrolytic graphite was considered.