***G&G* Data Depository:** FTIR and NMR spectra, to accompany:
A. Abduriyim et al., "Characterization of 'Green Amber' with Infrared and Nuclear Magnetic Resonance Spectroscopy," Fall 2009 *G&G*, pp. 158–177.

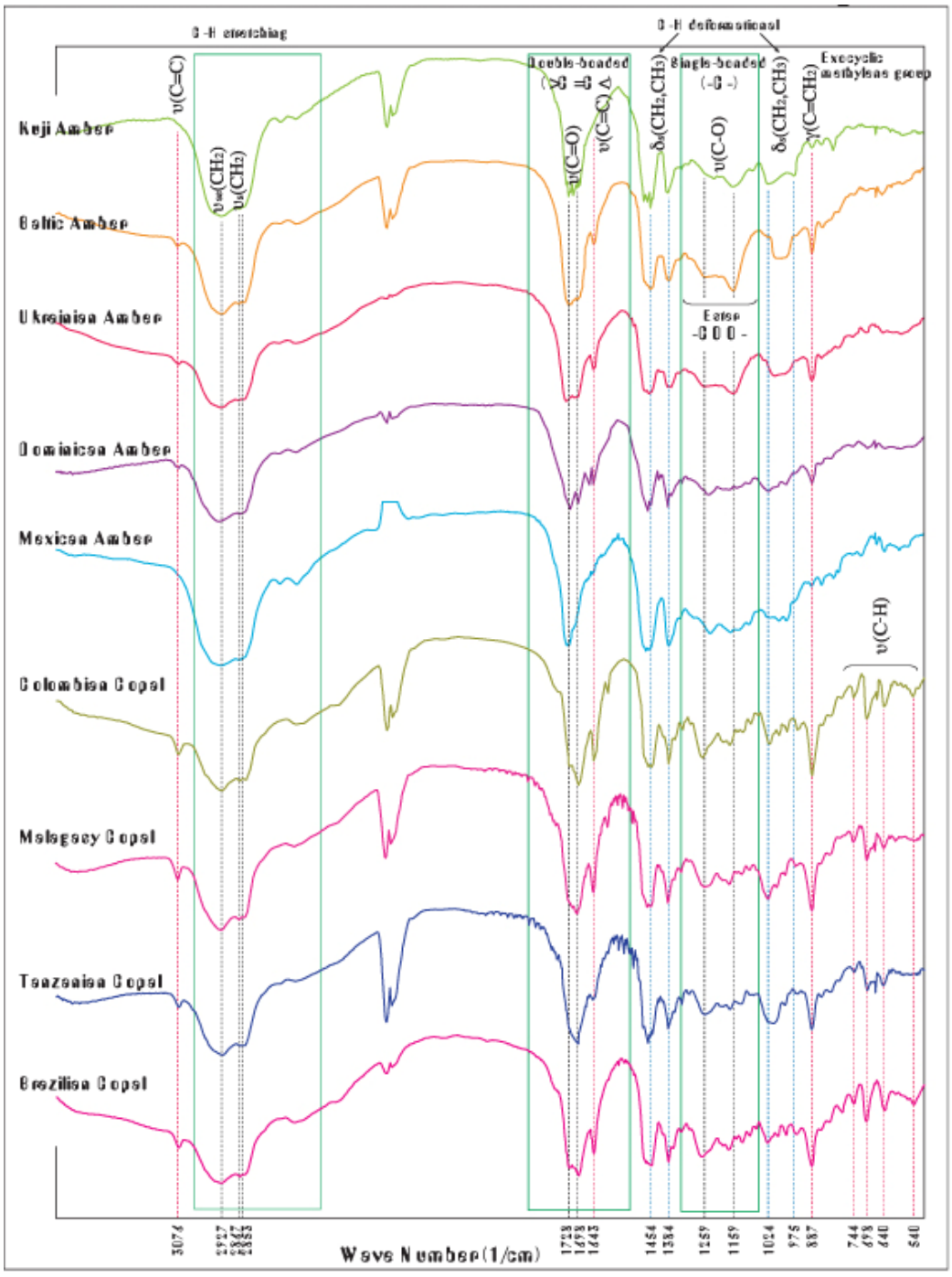

Figure DD-4. These FTIR spectra are for amber or copal from each locality, prior to heat treatment. The spectra are arranged in order of decreasing geologic age from top to bottom; the ages of the copal samples from Tanzania and Brazil are not known. The

spectra are offset vertically for clarity.

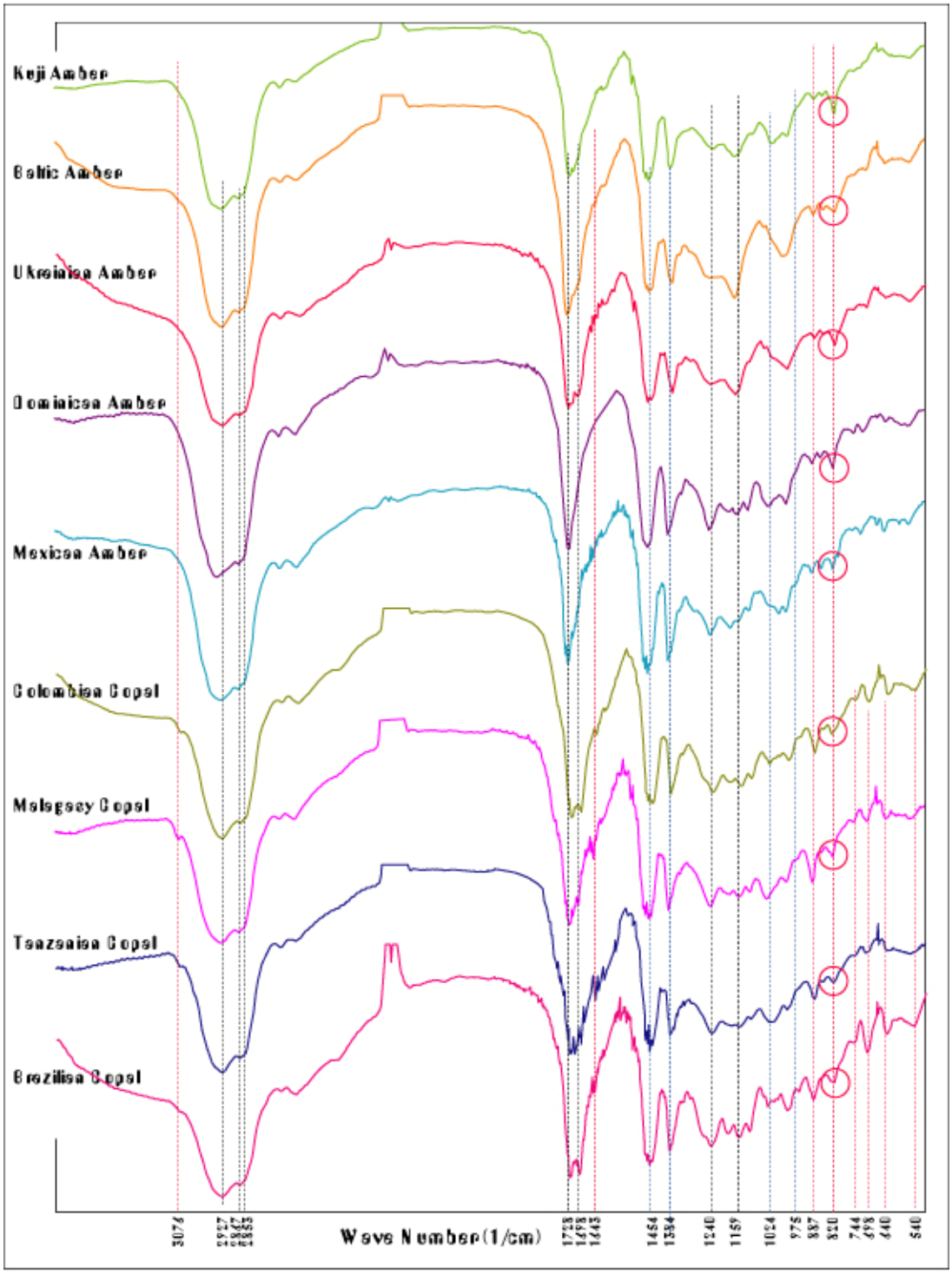

Figure DD-5. These FTIR spectra were collected after a two-stage pressurized heating process was applied to amber or copal from the various localities. The spectra are offset vertically for clarity.

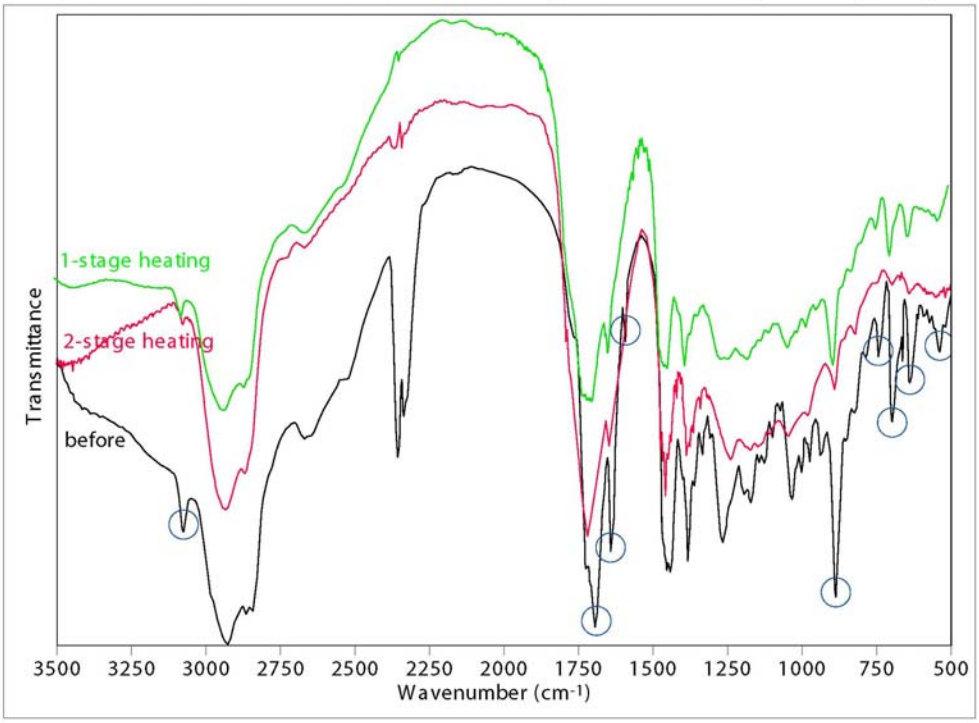

Figure DD-6. A representative FTIR spectrum is shown for Colombian copal beads that were treated using an experimental two-stage pressurized heating process at time intervals of 20 hours for each heating period (red line). This spectrum is similar to those of samples treated with the routine heating process that produces green color. Compared to an untreated sample (black line), the absorption at 1259 cm^{-1} shifts to 1240 cm^{-1}, and the 820 cm^{-1} feature is not clearly seen. Another Colombian copal sample was heated using an experimental one-stage heating process at conditions of 180ºC and 20 bar for one hour (green line). The absorption intensities at 4270, 4607 (both not shown in this figure), 3076, 1643, 1541, 887, 744, 698, 640, and 540 cm^{-1} (all marked with circles) are reduced by about half, but the spectral features of copal are still visible. The spectra are offset vertically for clarity.

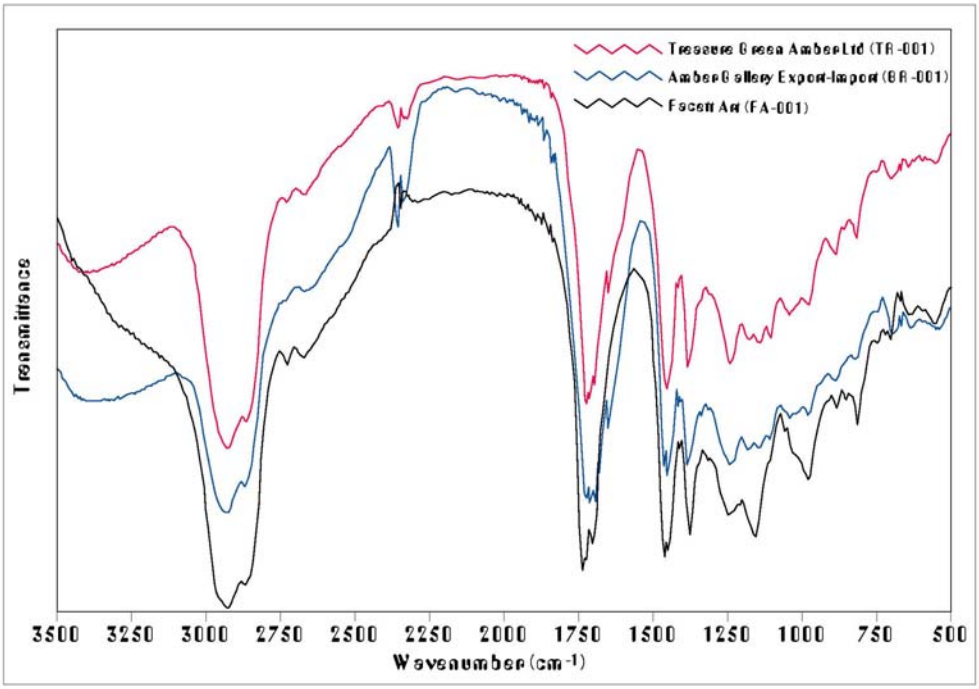

Figure DD-7. These FTIR spectra were taken on representative samples of “green amber” that were commercially treated by three companies. The pattern of the top two spectra are similar to the spectra of Dominican amber in general. However, a small feature near 820 cm^{-1} is detected, and absorptions below 700 cm^{-1} are not present. The bottom spectrum shows a Baltic shoulder feature, and resembles that of treated Ukrainian amber. The spectra are offset vertically for clarity.

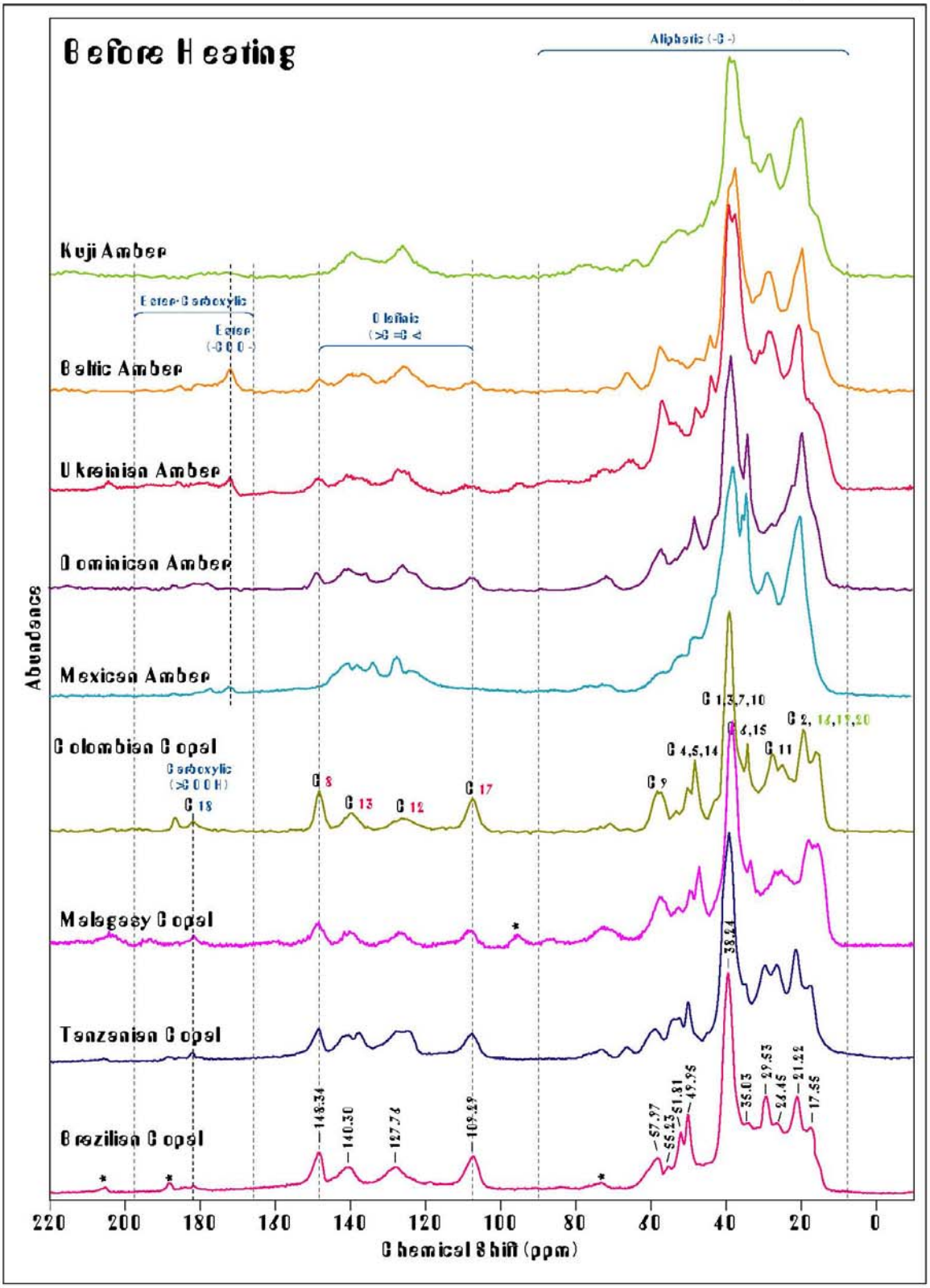

Figure DD-8. ^{13}C NMR spectra are shown for representative untreated amber and copal from different localities. Peaks related to carbon atoms distributed in the core of the hydrocarbon structural units are numbered. The asterisks mark spinning sidebands. The spectra are offset vertically for clarity.

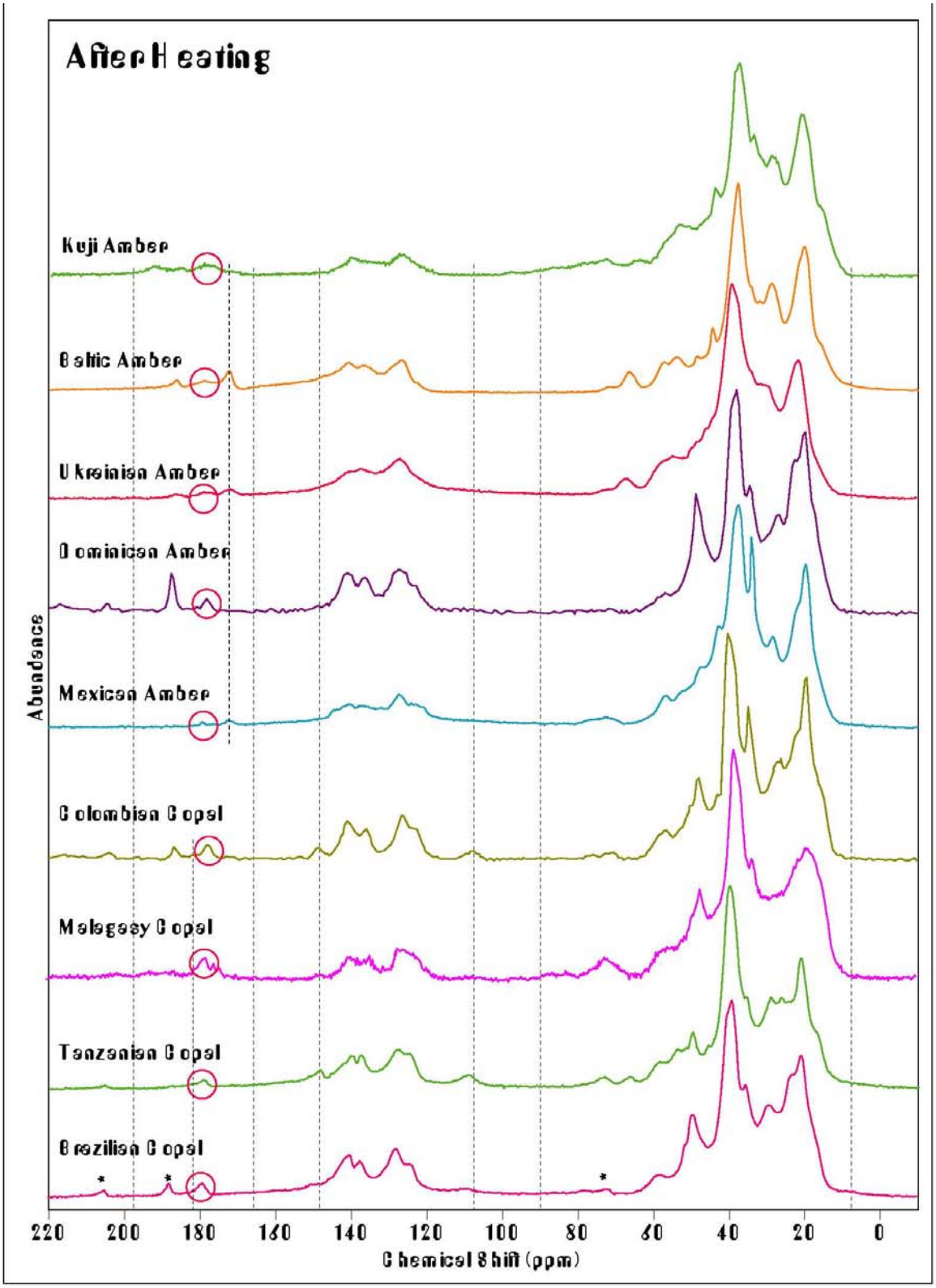

Figure DD-9. These ^{13}C NMR spectra are from amber and copal that were treated by the commercial two-stage pressurized heating process. A new signal at 179 ppm, detected in all of these heated samples, is marked with red circles. The spectra are offset vertically for clarity.

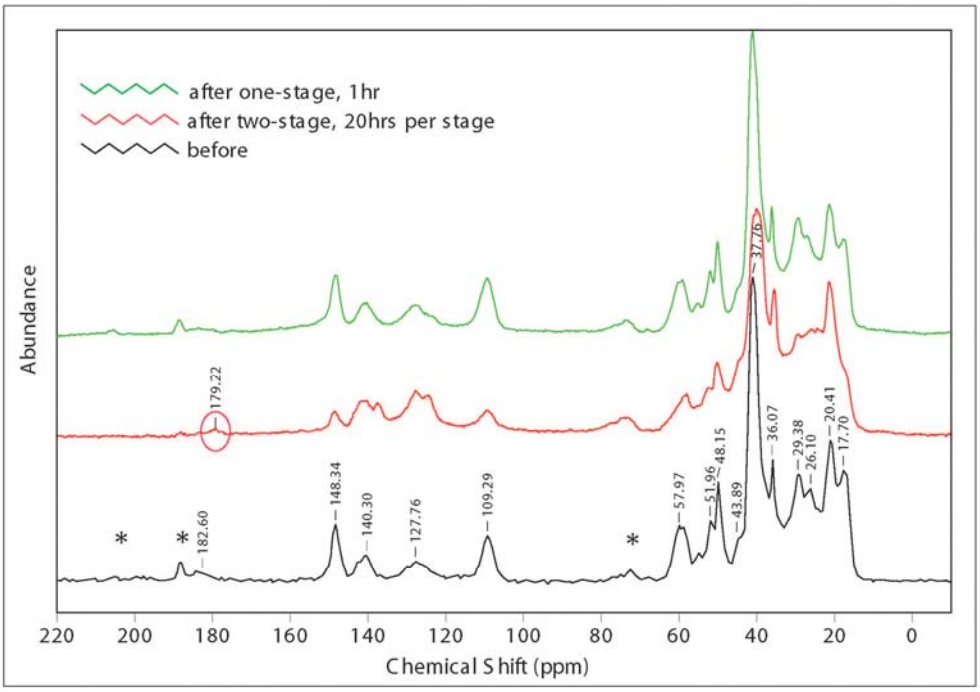

Figure DD-10. During the experimental two-stage (20 hours per stage) pressurized heating process, 14 beads of Colombian copal turned brownish yellow. The features in the ^{13}C NMR spectrum collected after this treatment (red line) are similar to those from samples treated with the commercial two-stage heating (for 20 and 30 hours). In addition, a new signal at 179 ppm was detected (circled). In the sample treated with a one-stage heating process (1 hour; green line), no major changes were observed when compared to the copal before heating (black line). However, the signal at 182 ppm from the carboxylic group was not detected after the one-stage heating, and no signal was detected at 179 ppm. The spectra are offset vertically for clarity.

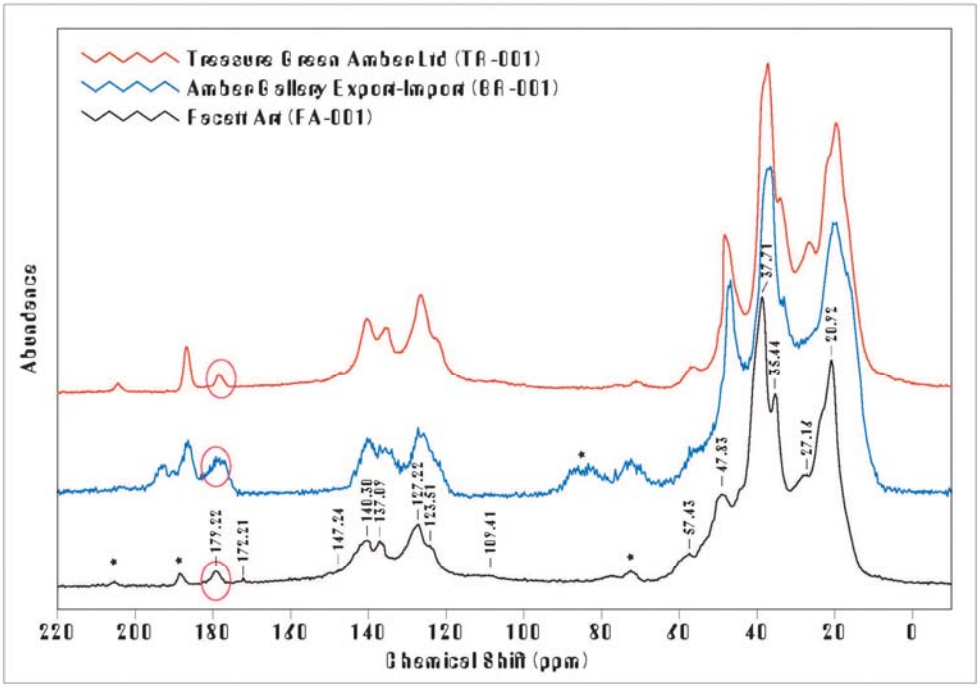

Figure DD-11. ^{13}C NMR spectra are shown for representative samples of “green amber” that were commercially treated by three companies. The signals at 148 and 108 ppm are hardly detectable, and their patterns resemble the spectra of untreated Kuji amber, which is likely the oldest and most structurally mature. The peaks of single-bonded carbon at 48 and 35 ppm are sharp in samples TR-001 and BR-001, unlike the broad features in the single-bonded region of the Kuji spectrum. A weak signal attributed to the ester group is observed at 172 ppm in sample FA-001 only, and a signal at 179 ppm is detected in all the samples. The spectra are offset vertically for clarity.