Supplementary material

$[Fe_3O_4@SiO_2@Si(CH_2)_3–NMe_2–(CH_2)_2–NMe_2–SO_3H][Cl]_2$ as a novel magnetic nanocatalyst for the synthesis of bis(6-amino-1,3-dimethyl-uracil-5-yl)methanes

Abdolkarim Zare[1,*], Manije Dianat[2], Ahmad Reza Moosavi-Zare[3,4,*], Fatemeh Monfared[2]

[1]*Department of Chemistry, Faculty of Nano and Bio Science and Technology, Persian Gulf University, Bushehr 75169, Iran.*

[2]*Department of Chemistry, Payame Noor University, PO BOX 19395-3697, Tehran, Iran.*

[3]*Department of Chemical Engineering, Hamedan University of Technology, Hamedan, 65155, Iran.*

[4]*Chemistry Department, College of Sciences, Shiraz University, Shiraz 71946-84795, Iran.*

***Corresponding authors:** abdolkarimzare@yahoo.com; a.moosavizare@saadi.shirazu.ac.ir

This supplementary information includes the details on the used materials and devices, and selected original spectrums of the fabricated bis(6-amino-1,3-dimethyl-uracil-5-yl)methanes (Figures S1-S9).

Chemicals and devices

All chemicals were bought from Fluka, Sigma-Aldrich or the Iranian Chemical Companies. The fabricated uracil derivatives were identified by comparing their melting points/spectral data with those reported in the previous researches. Progress of the reactions was monitored by thin layer chromatography (TLC) (silica gel SIL G/UV 254 plates). To measure melting points, a Thermo Scientific 9200 apparatus was used (in open capillary tubes). Energy dispersive X-ray spectroscopy (EDS) and elemental mapping analysis were done by a SAMX-EDS instrument (France system). A TESCAN FE-SEM instrument (model MIRA III) was utilized for determining sizes and morphologies of the particles. For recording the FT-IR spectra, a Thermo device (model AVATAR) was used. XRD analysis was carried out by a PHILIPS apparatus (model PW1730, Cu Kα radiation, λ=1.54056 Å). VSM analysis was performed using a MDK (Meghnatis Daghigh Kavir) device at room temperature. TGA was done using TA apparatus (model Q600), at 25-600 ºC, with temperature increase rate of 10 $^{o}C.min^{-1}$ in argon atmosphere. Bruker Avance DPX, FT-NMR spectrometer (400 or 500 MHz for ^{1}H NMR, and 125 MHz for ^{13}C NMR) was utilized for running the NMR spectra. Mass spectra were recorded by a Shimadzu GC-MS-QP 1100 Ex instrument.

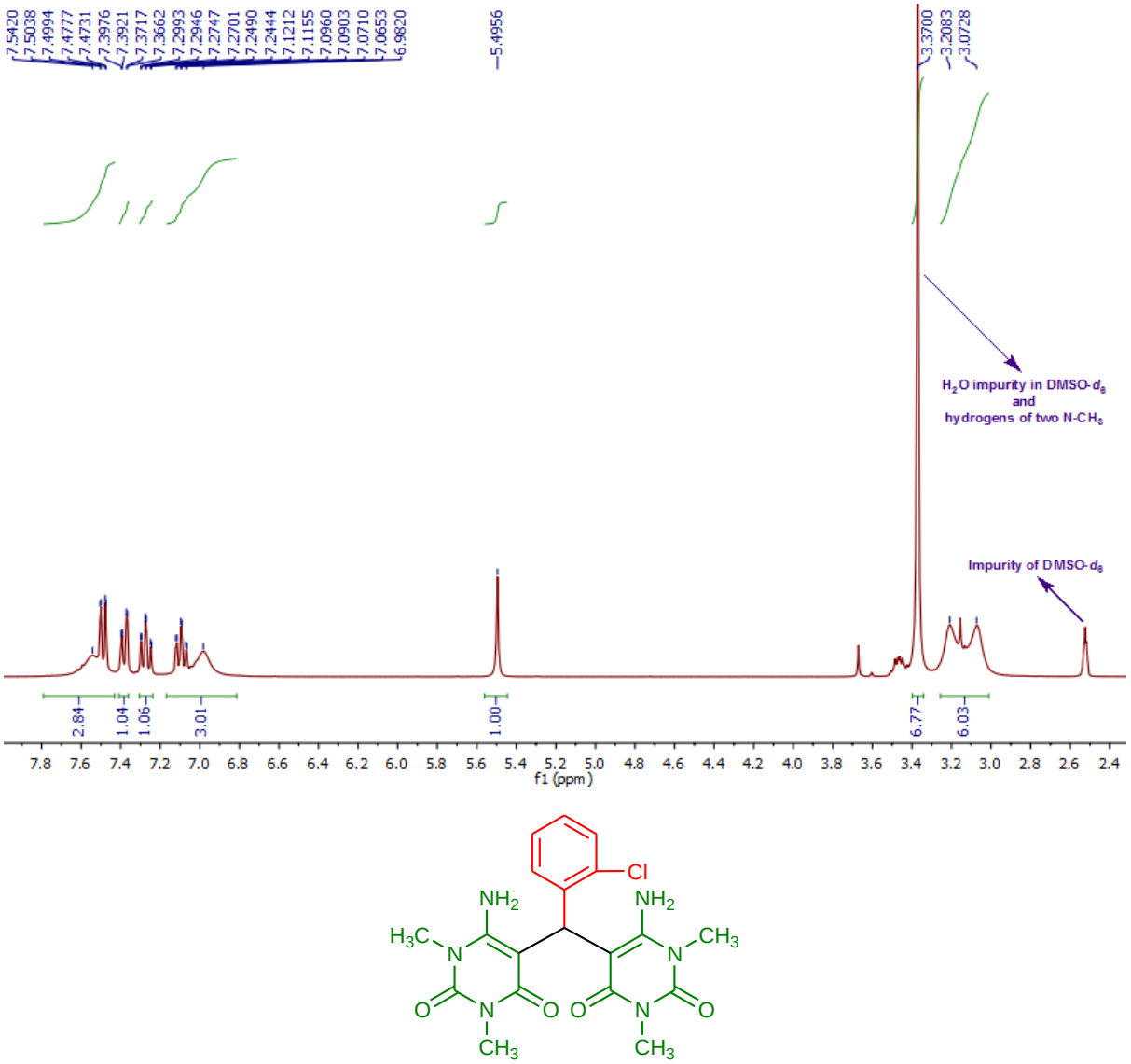

Figure S1. The ^{1}H NMR spectrum of bis(6-amino-1,3-dimethyl-uracil-5-yl)methane **3b**.

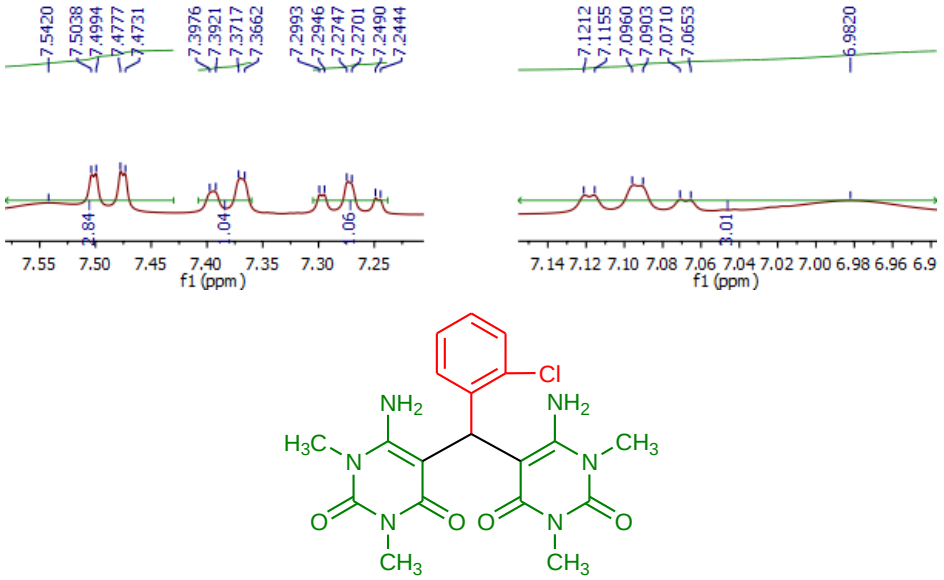

Figure S2. The expanded ^{1}H NMR spectrum of bis(6-amino-1,3-dimethyl-uracil-5-yl)methane **3b**.

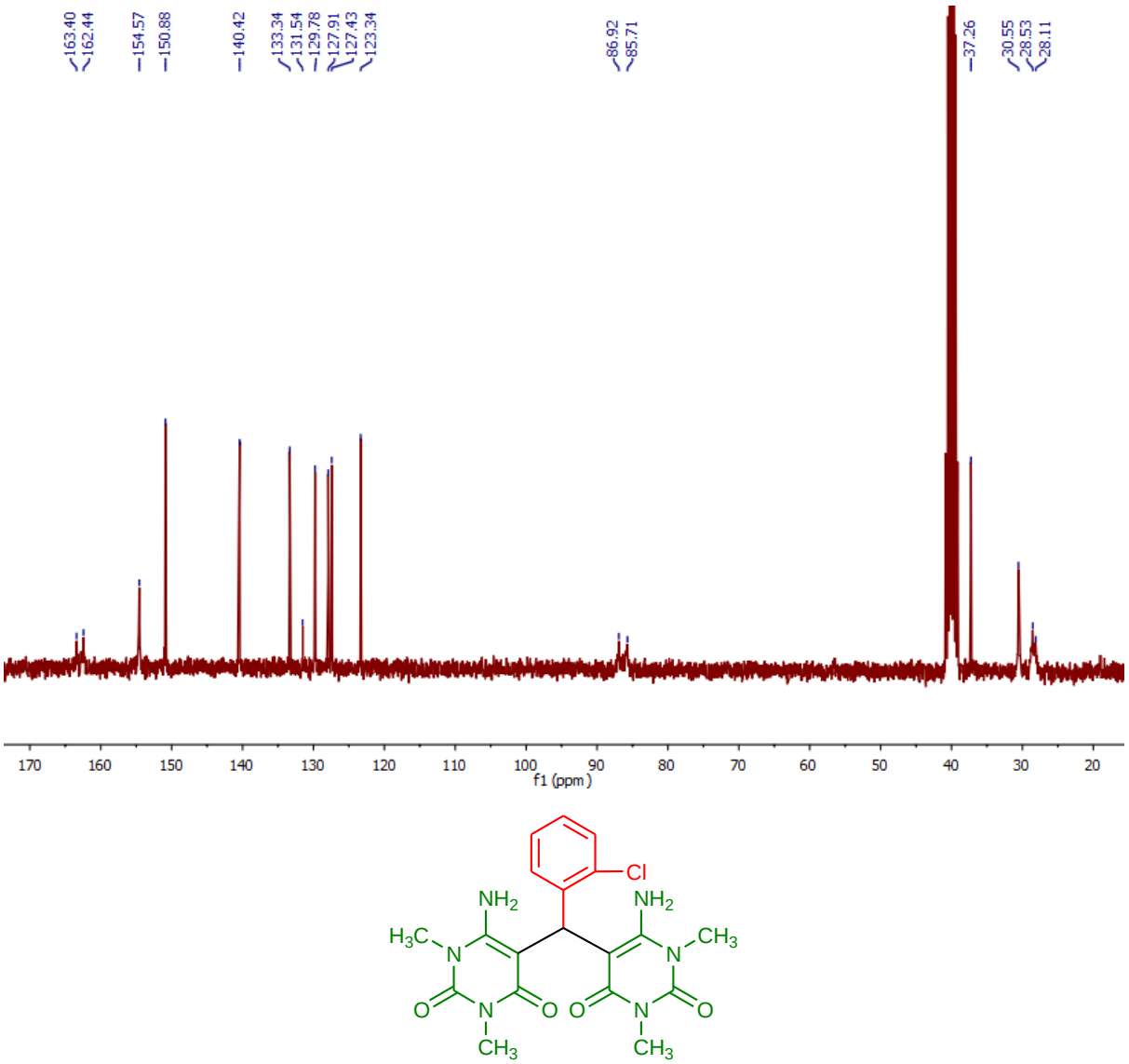

Figure S3. The ^{13}C NMR spectrum of bis(6-amino-1,3-dimethyl-uracil-5-yl)methane **3b**.

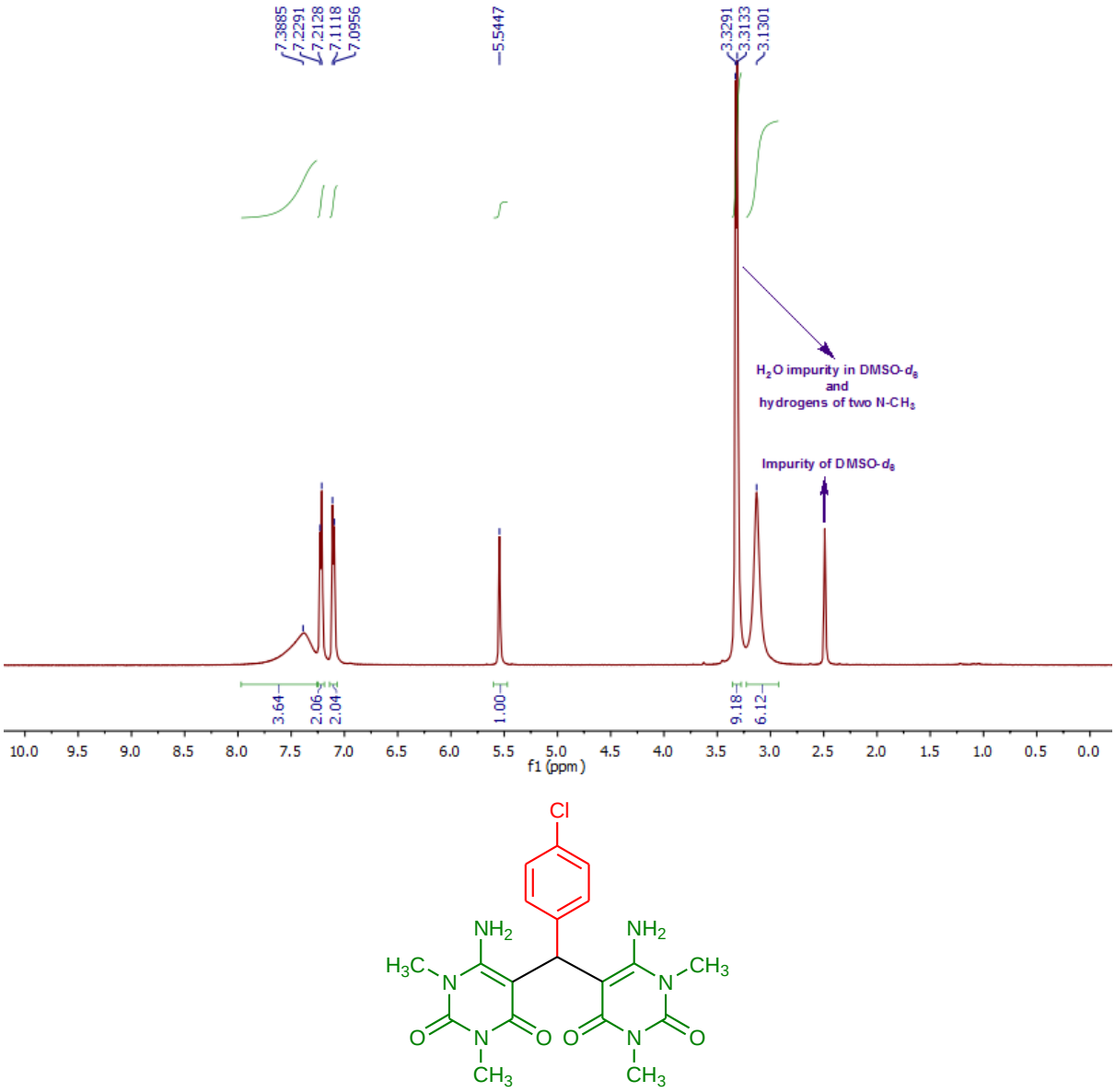

Figure S4. The ^{1}H NMR spectrum of bis(6-amino-1,3-dimethyl-uracil-5-yl)methane **3c**.

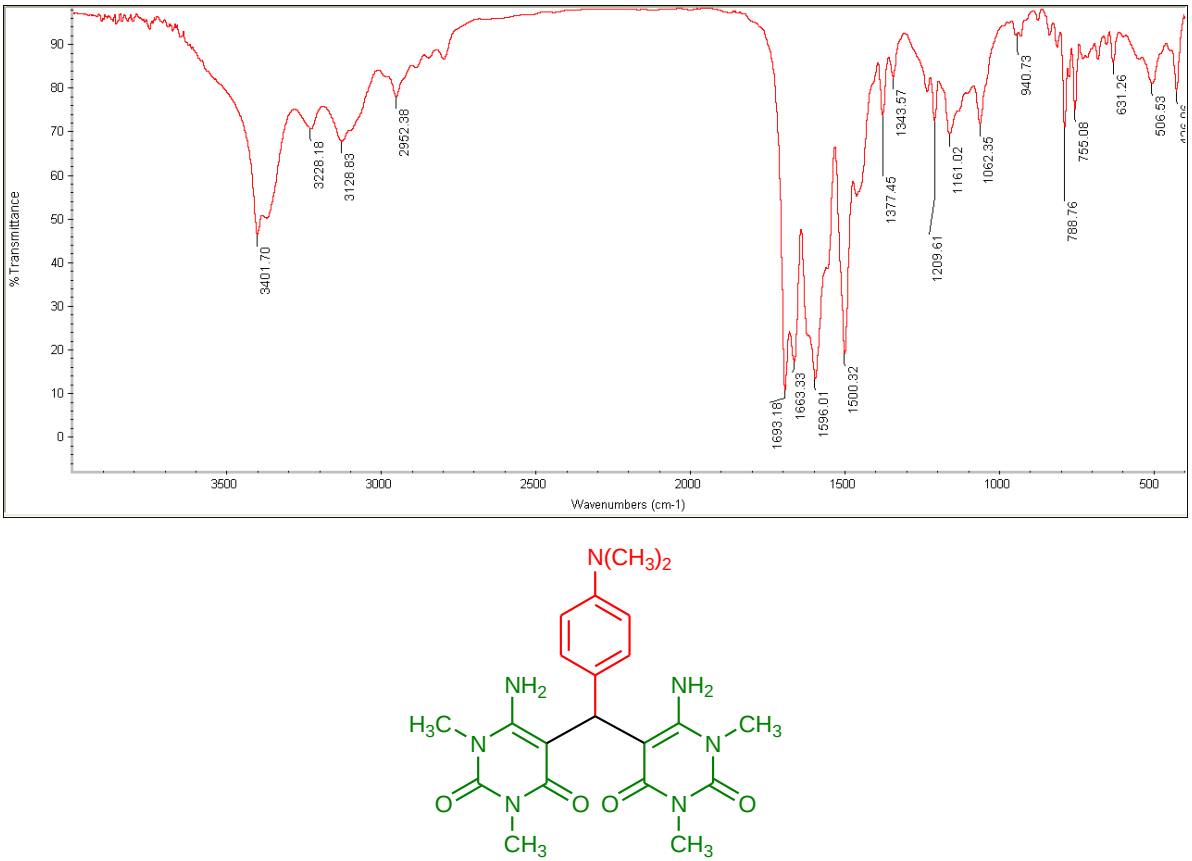

Figure S5. The FT-IR spectrum of bis(6-amino-1,3-dimethyl-uracil-5-yl)methane **3f**.

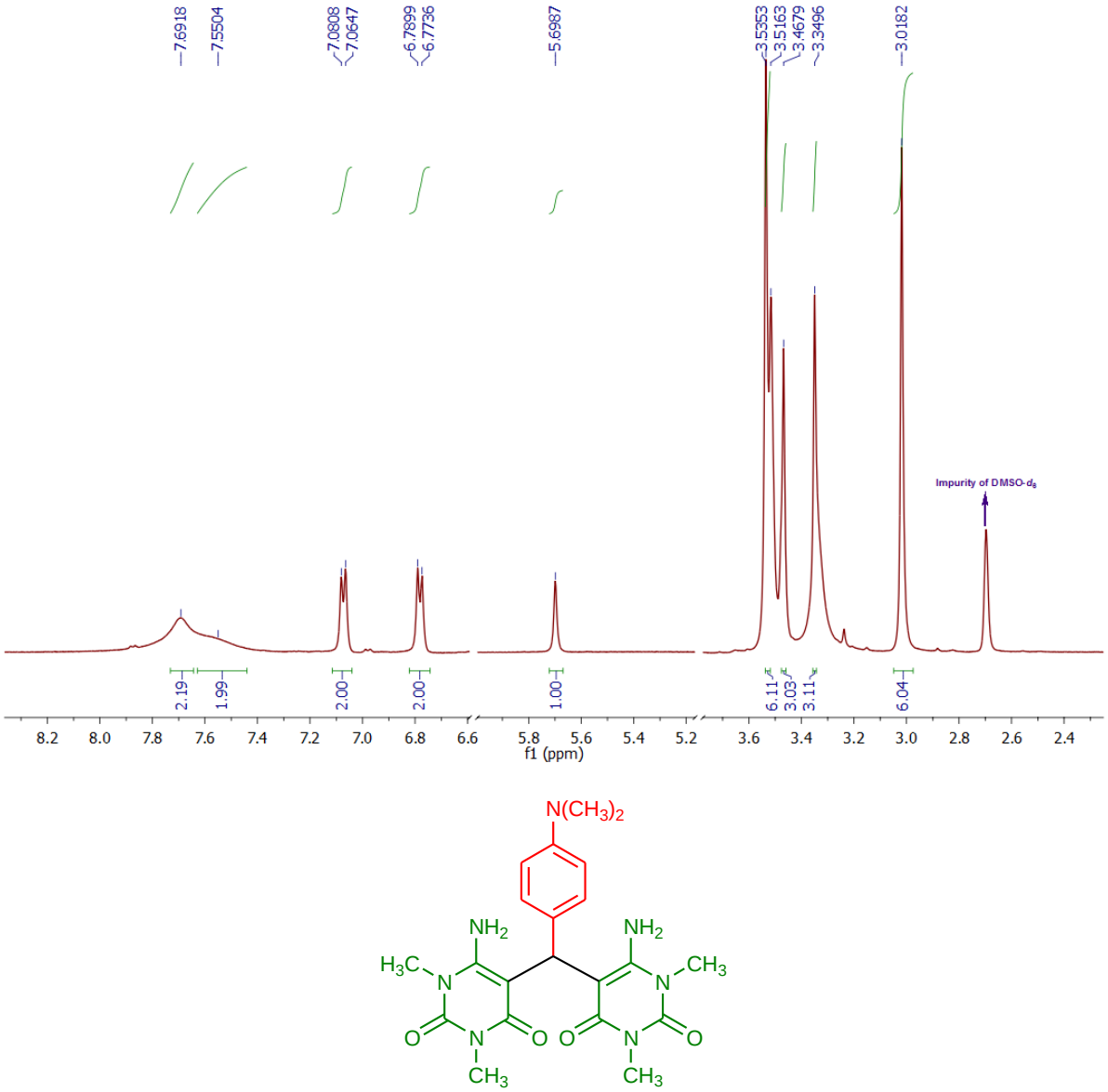

Figure S6. The ^{1}H NMR spectrum of bis(6-amino-1,3-dimethyl-uracil-5-yl)methane **3f**.

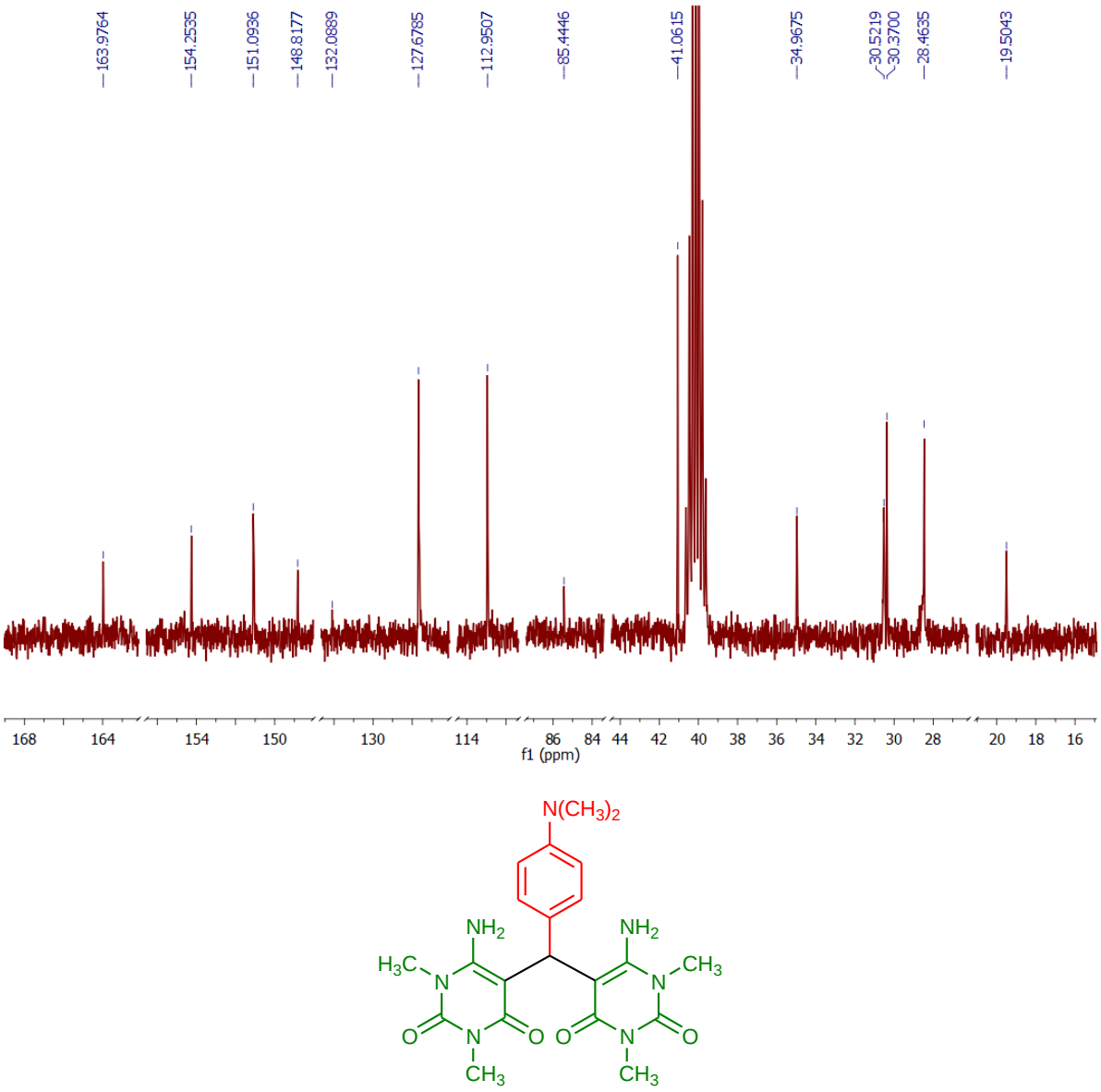

Figure S7. The ^{13}C NMR spectrum of bis(6-amino-1,3-dimethyl-uracil-5-yl)methane **3f**.

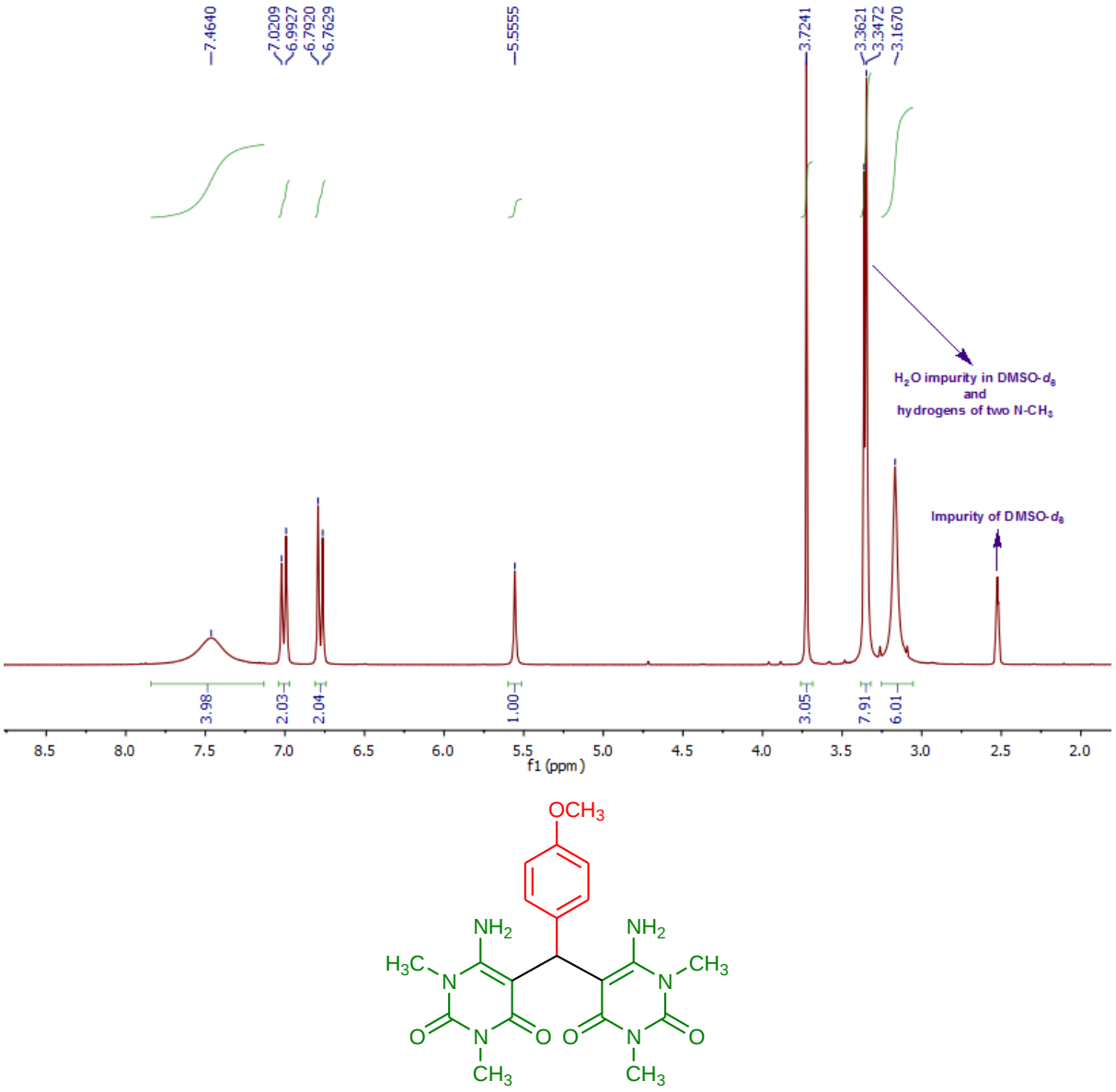

Figure S8. The ^{1}H NMR spectrum of bis(6-amino-1,3-dimethyl-uracil-5-yl)methane **3h**.

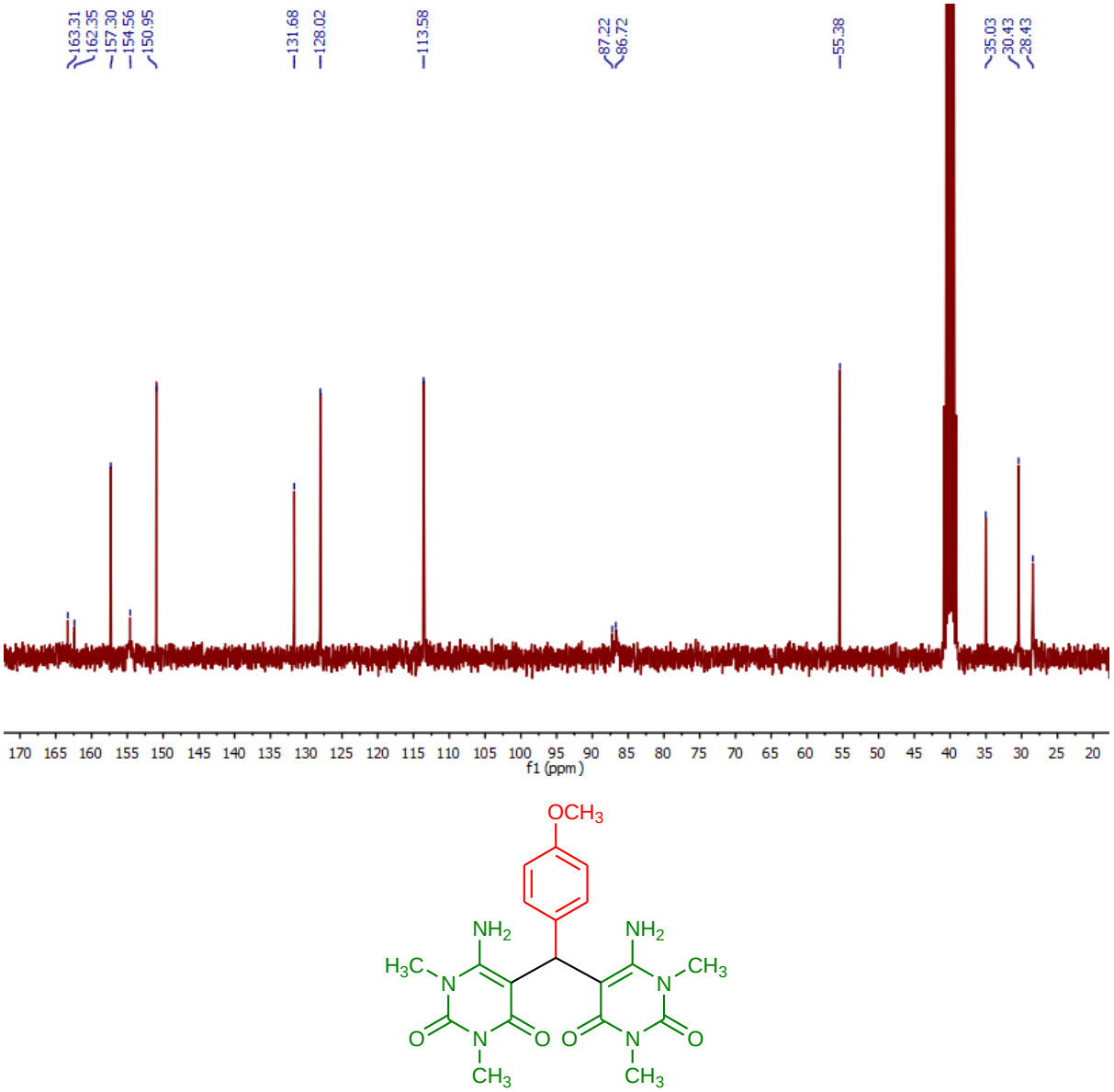

Figure S9. The ^{13}C NMR spectrum of bis(6-amino-1,3-dimethyl-uracil-5-yl)methane **3h**.