SUPPORTING INFORMATION

List of attachments

i) CIF file

ii) FT-IR spectra results

iii) ^{1}H NMR results

iv) videos

i) CIF File

Details of data collection, solution and refinement, fractional coordinate with anisotropic thermal parameters, and lists of bond lengths and angles. The CIFs of compounds A, B Cambridge Crystallographic Data Centre (CCDC) deposition numbers 878989 and 878990.

ii) FT-IR spectroscopy results

To confirm the functional groups present in the chalcone crystals A and B, FT-IR spectra were recorded in the spectral range of 600-4000 cm^{-1}. In spectrum C and D, mentioned about the corresponding vibrations mode of (4-(benzyloxy)benzaldehyde), (1-(4-(benzyloxy)phenyl)ethanone) respectively. The sharp peak at 1670 cm^{-1} and 1720 cm^{-1} due to the presence of C=O group and the intense peak at 1105 cm^{-1} and 1118 cm^{-1} is due to the vibration mode of C-O. In spectrum A and B the absorption bands corresponding to asymmetric and symmetric -OH vibrations at 3450 cm^{-1} and 3460 cm^{-1}, C-H stretching vibrations of -CH group were observed at 2979 and 2962 cm^{-1}, respectively. The weak absorption at summation bands in the range of 2000-1650 cm^{-1} were attributed to the aromatic C-H out of plane bending. The strng absorption band at 1638 cm^{-1} and 1603 cm^{-1} corresponds to the C=O stretching vibration of compound A and B respectively. The relatively stronger absorption band at 1592 cm^{-1} and a weaker absorption band at 1493 cm^{-1} were due to aromatic ring vibrations and C=C bending modes of α, β-unsaturated carbons, respectively. The absorption bands observed in the region of 1000-800 cm^{-1} were the characteristic of C-H out of plane bending or wagging vibrations of hydrogen atoms attached to unsaturated carbons.

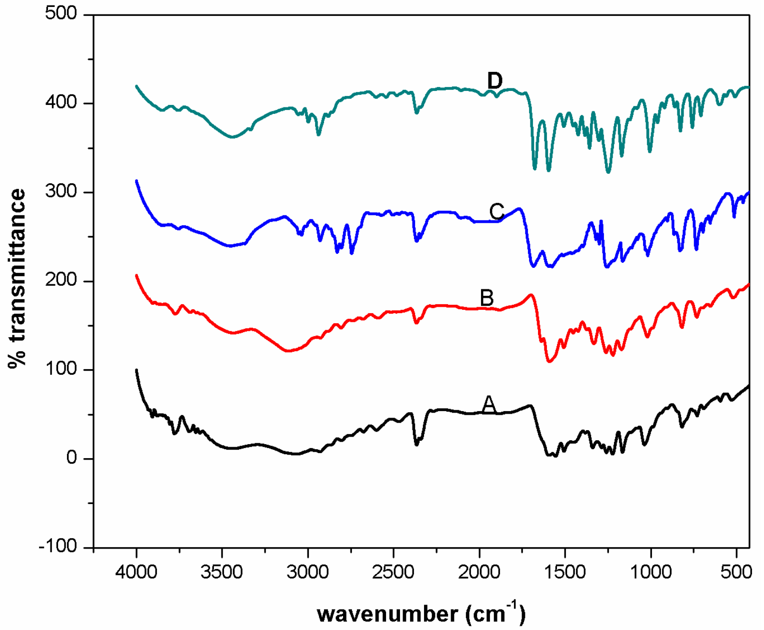

Figure S1 FT-IR spectra of A), B), C) and D).

A) Chalcone Crystal A

B) Chalcone Crystal B

C) aldehyde protected with benzyl chloride (4-(benzyloxy)benzaldehyde)

D) ketone protected with benzyl chloride(1-(4-(benzyloxy)phenyl)ethanone)

iii) ^{1}H NMR RESULTS

The protan NMR spectra of crystal A indicated the following resonance signals. ^{1}H NMR (500 MHz,$CDCl_3$) (δ/ppm): 5.01 (s, 1H, Ar-OH); 5.14 (s, 2H, Ar-CH_2); 6.94 (d, J=6.95 Hz, 2H, Ar-CH); 7.02 (d, J=7.03 Hz, 2H, Ar-CH); 7.46 (d, J=7.45, 2H, Ar-H); 7.63 (d, J=7.60 Hz, 1H, CH=CO); 7.81 (d, J=7.80 Hz, 2H, Ar-H); 8.05 (d, J=8.02 Hz, 2H, Ar-H); 8.1 (d, J=8.01 Hz, 2H, H-Ar).

The protan NMR spectra of crystal B exhibited the following resonance signals. ^{1}H NMR (500 MHz,$CDCl_3$) (δ/ppm): 5.18 (s, 1H, Ar-OH); 5.75 (s, 2H, Ar-CH_2); 6.90 (d, J=6.91 Hz, 2H, Ar-CH); 7.08 (d, J=7.08 Hz, 2H, O-Ar-H); 7.3 (d, J=7.29 Hz,2H, HC-CO); 7.41 (m, 2H, C=CH); 7.57 (m, 2H, Ar-H); 7.81 (d, J=7.79 Hz, 2H, Ar-H); 8.05 (m, 1H, CH-C=O).

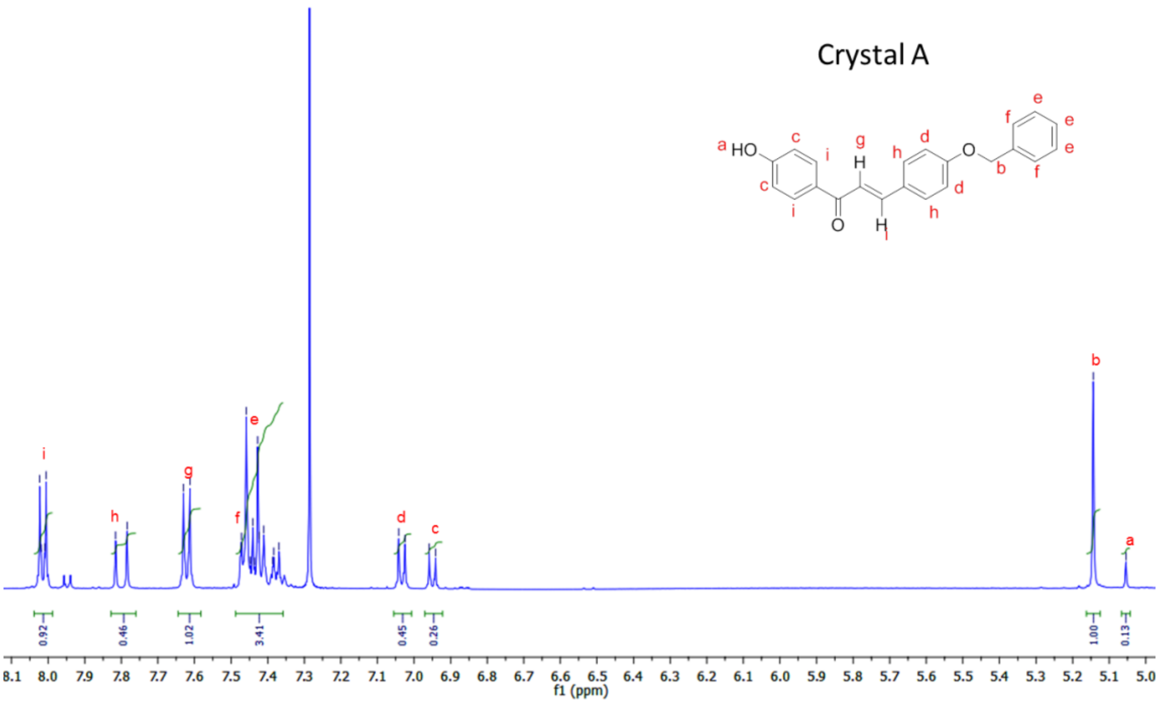

Figure S2. ^{1}H NMR spectrum of crystal A

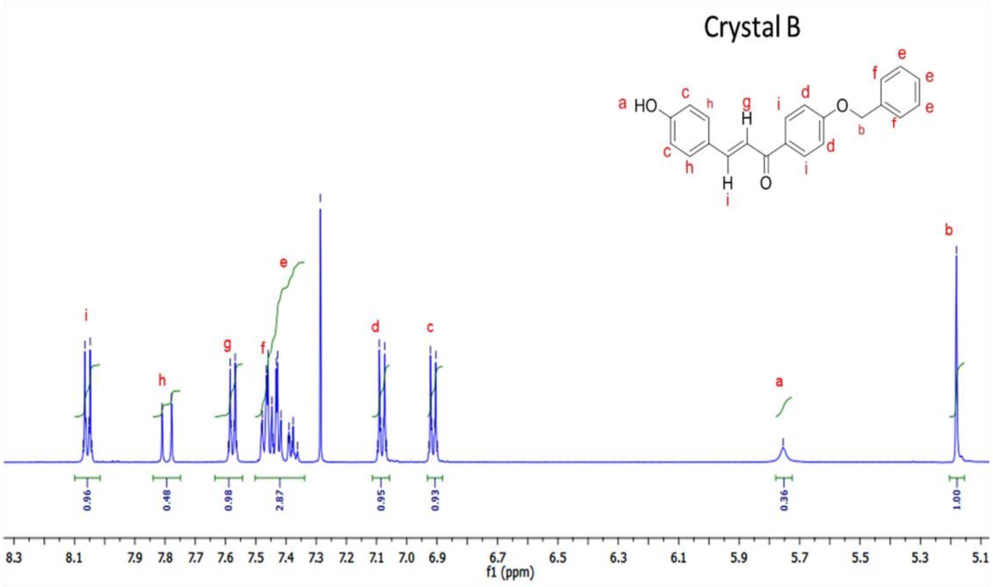

Figure S3. ^{1}H NMR spectrum of crystal B

iv) Video

Some of scientific video clips are attached here.

i) The crystal A, at the just below the melting point some parts oscillating in the liquid state and some part in crystalline state. This melting point named as oscillation melting point.

ii) Isotropic to crystalline state video clip of crystal A.

iii) Isotropic to crystalline state video clip of crystal B.