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Nematic to smectic texture transformation in MBBA by *in-situ* synthesis of silver nanoparticles

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Supporting information

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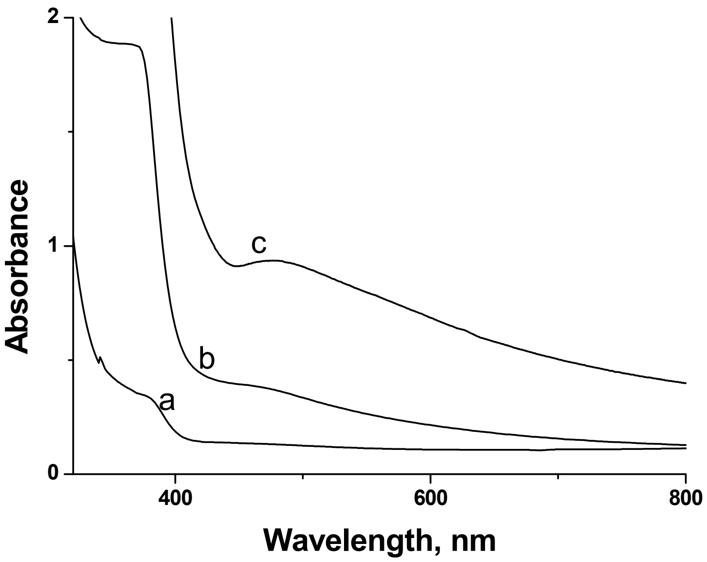

Figure S1: Uv-visible absorption spectra of silver nanoparticles prepared in MBBA using a) 1 mol %, b) 3 mol % and c) 80 mol % of $AgNO_3$

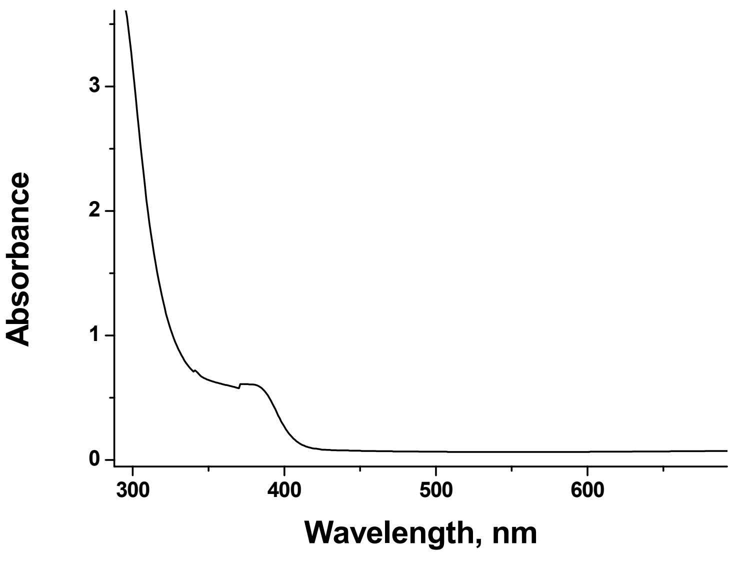

Figure S2: Uv-Visible absorption spectrum of a mixture of MBBA, 4-butylaniline and 4-methoxybenzaldehyde in thin film.

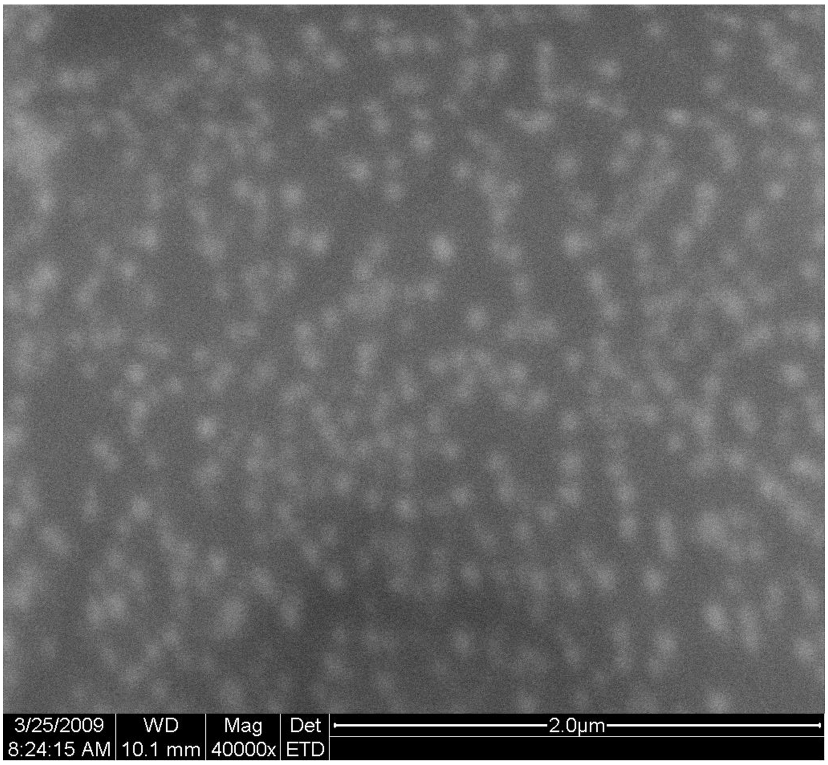

Figure S3: SEM image of silver nanoparticles prepared in MBBA using 1 mol % of $AgNO_3$

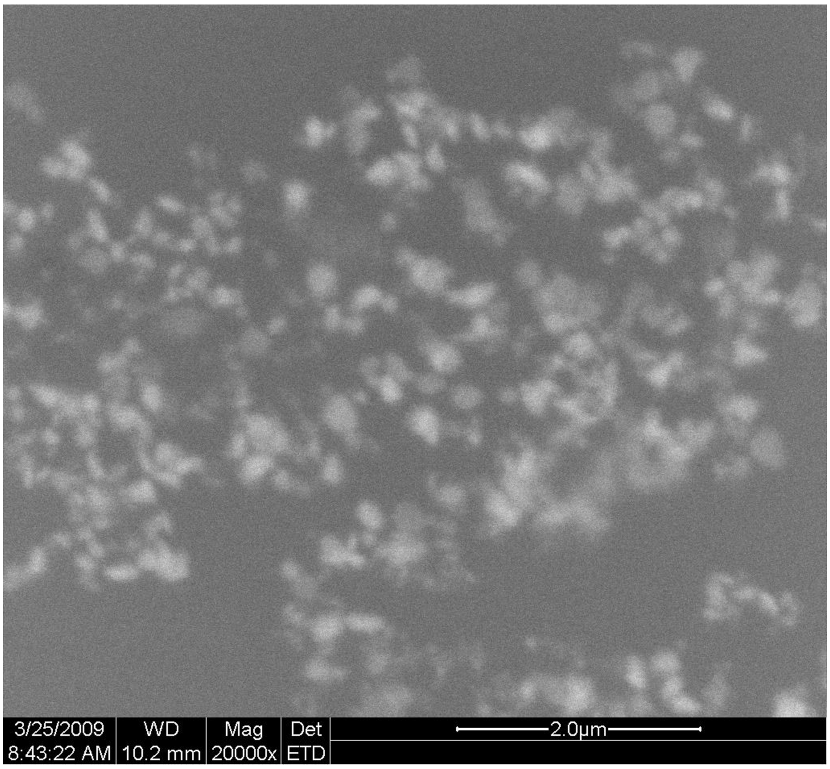

Figure S4: SEM image of silver nanoparticles prepared in MBBA using 3 mol % of $AgNO_3$

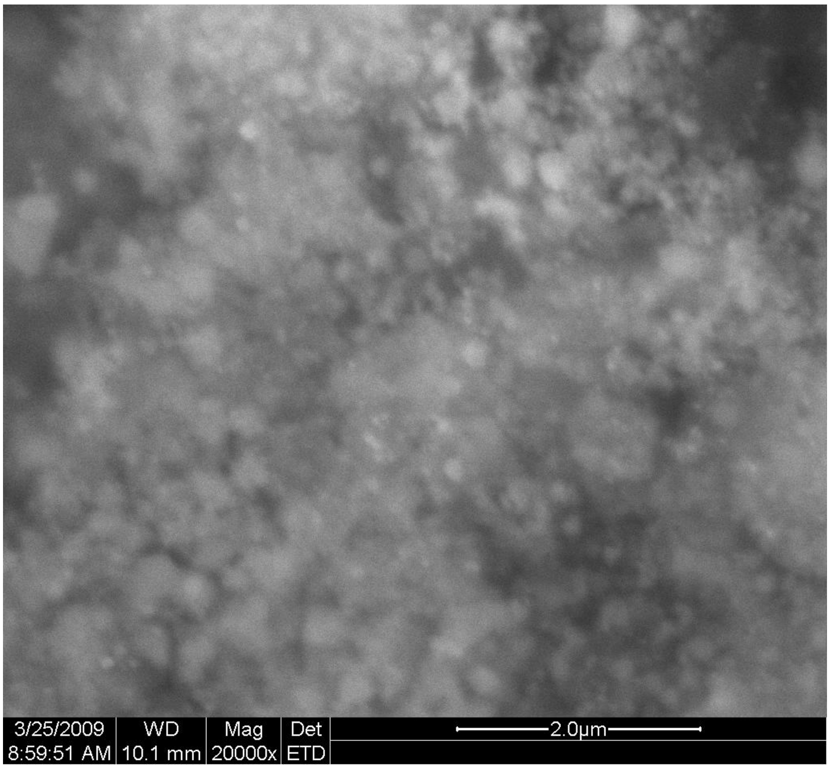

Figure S5: SEM image of silver nanoparticles prepared in MBBA using 5 mol % of $AgNO_3$

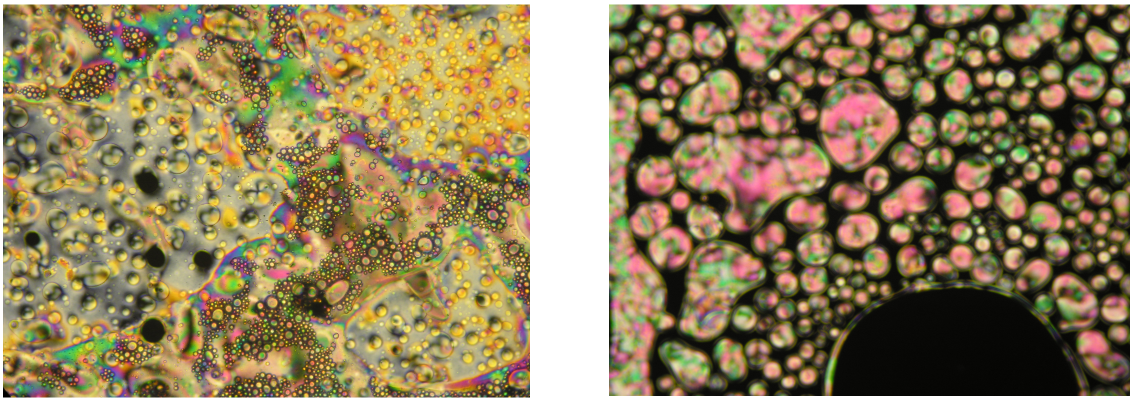

Figure S6: OPM pictures of MBBA-Ag composite prepared using 1 mol% a) before heating b) after heating and cooling. The nematic texture is lost on the second cycle of heating and cooling, followed by the appearance of rectangular blocks of MBBA-Ag composites.

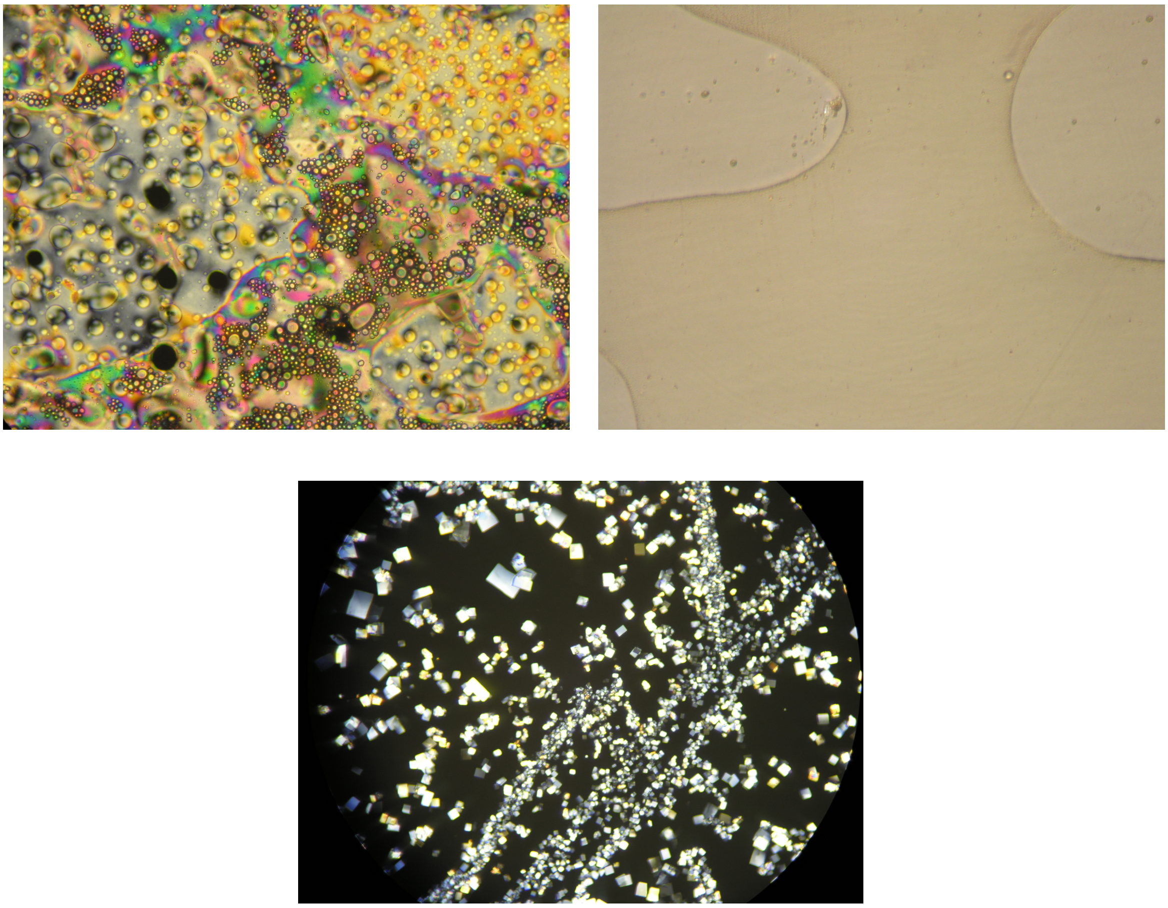

Figure S7: OPM pictures of MBBA-Ag composite prepared using 3 mol% of $AgNO_3$: a) before heating b) isotropic state and c) after heating and cooling.

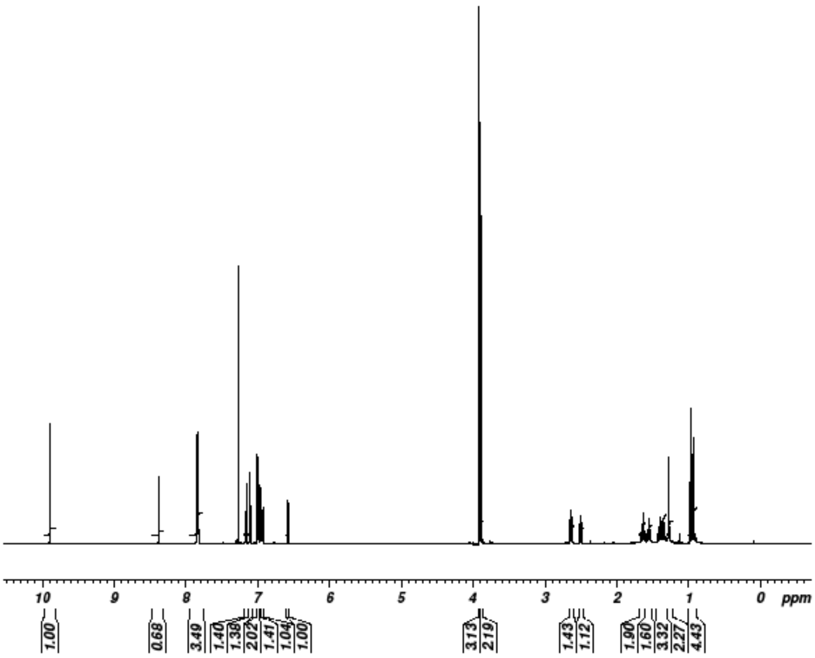

Figure S8: NMR spectrum of MBBA-Ag composite prepared using 80 mol% of $AgNO_3$, after 3 days

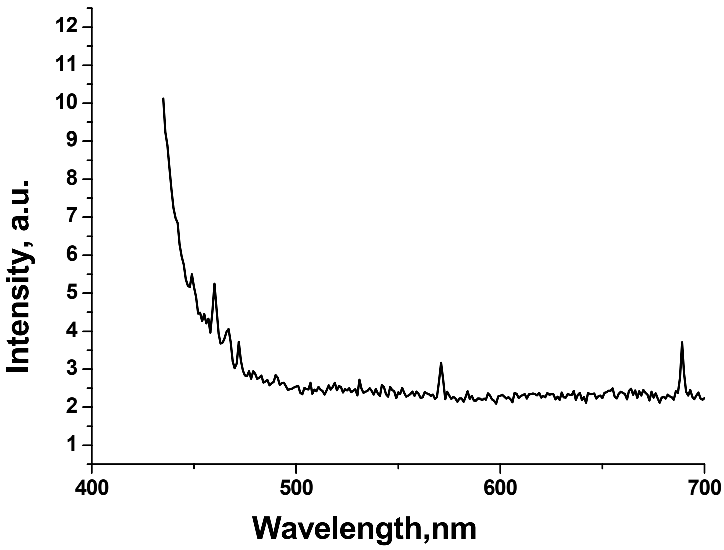

Figure S9: Fluorescence spectrum of 4-butylaniline-Ag composite in thin film. The Excitation wavelength was 420 nm. No emission is observed.

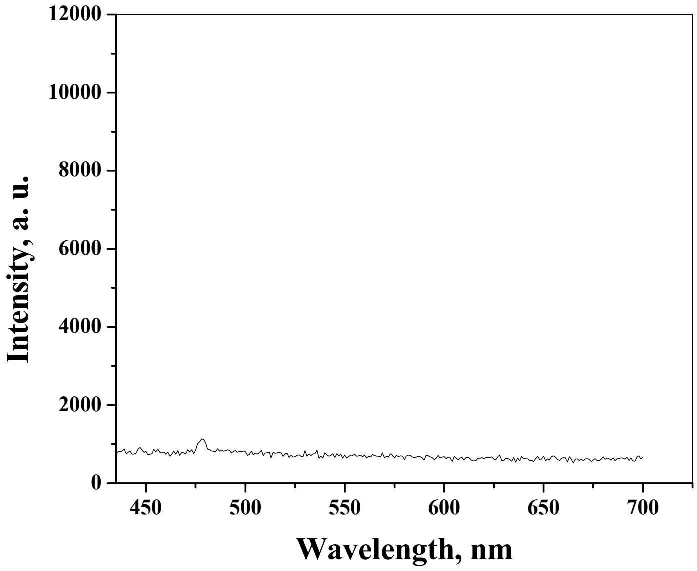

Figure S10: Fluorescence spectrum of a mixture of MBBA, 4-butylaniline and 4-methoxy benzaldehyde in thin film. Excitation wavelength was 420 nm. No emission was observed.

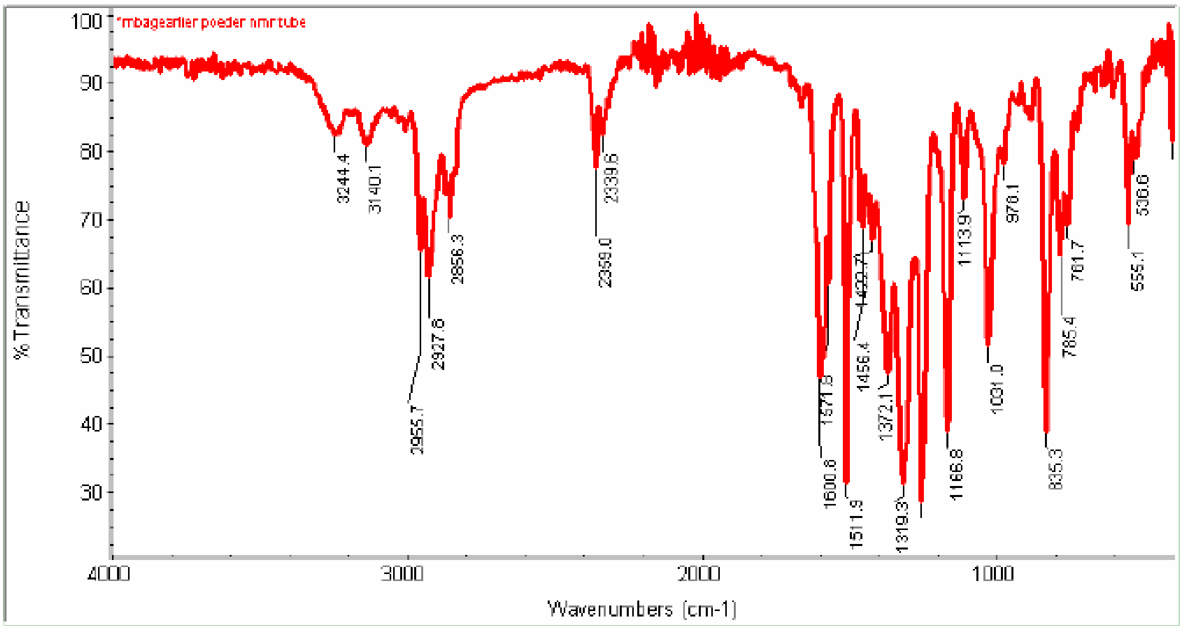

Figure S11: FT-IR spectrum of MBBA-Ag NP conjugate containing 80 mol% of $AgNO_3$ with respect to MBBA. The –C=N peak of MBBA originally appeared at 1625 cm^{-1} (see figure below) is shifted to 1600 cm^{-1}. Amines stretching vibrational frequencies are also shifted to lower frequencies (from normal values of 3400-3500 to 3244-3140 cm^{-1}). The carbonyl of aldehyde should be overlapped with MBBA imine, as formation of aldehyde was evident from NMR spectra of the MBBA-Ag NP conjugate.

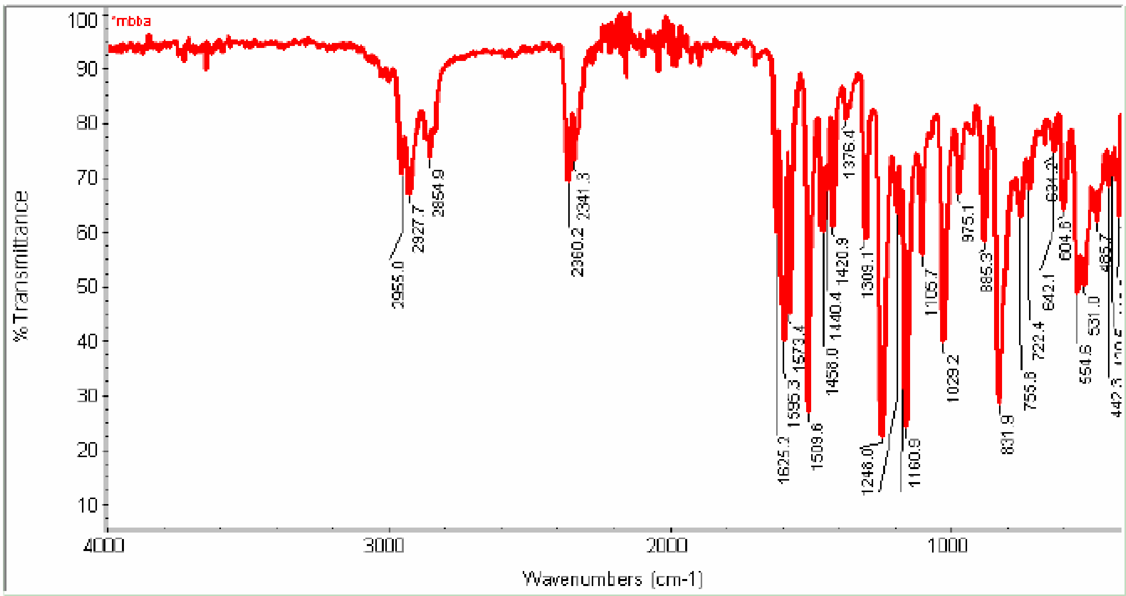

Figure S12: FT-IR spectrum of MBBA