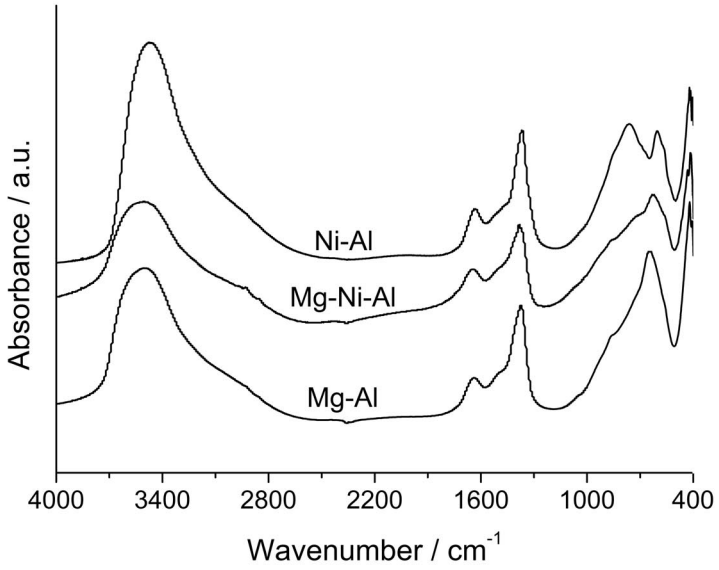
Supporting Information - jp064972q

The as-synthesized materials were characterized by FT-IR spectroscopy. The powdered sample was homogeneously mixed with KBr and pressed disks were measured at room temperature. The spectra were collected in a Thermo Nicolet 5700 Fourier transform spectrometer in the range of 400-4000 cm^{-1} by co-addition of 64 scans at a nominal resolution of 4 cm^{-1}. The spectra of the samples display typical absorption bands of hydrotalcite-like compounds. The table collects the position of the relevant bands and the corresponding assignments to water, hydroxyls, and carbonate groups, as well as framework vibrations as detailed elsewhere.[1,2] Bands in the carbonate region are very similar in the three samples, suggesting the similar degree of symmetry in the interlayer space of the hydrotalcites. Distinctive is the prominent band at 604 cm^{-1} in Ni-Al hydrotalcite, which is assigned to Ni-OH translation.[2] This feature appears as a shoulder in Mg-Ni-Al hydrotalcite, which can be expected due to the lower Ni-content, and is obviously absent in Mg-Al hydrotalcite.

1. Miyata, S. *Clays Clay Miner.* **1975**, *23*, 369.
2. Kloprogge, J. T.; Frost, R. L. *J. Solid State Chem.* **1999**, *146*, 506.



Group	Mg-Al-as	Mg-Ni-Al-as	Ni-Al-as	Assignment
Water and hydroxyls	3507	3506	3474	OH stretching
	3047	3006	2929	H_2O-CO_3^{2-} bridging
	1638	1650	1638	OH bending
Carbonates	1373	1383	1367	CO_3^{2-} asymmetric stretching
	864	860	874	CO_3^{2-} out-of-plane
Framework	1042	1056	1052	Al-OH deformation
	733, 560	713, 554	762, 564	Al-OH translation
	-	-	604	Ni-OH translation
	648	630	-	Mg-OH translation