Supporting Information

Phosphoric Acid Doped Polybenzimidazole as an Heterogeneous Catalyst for Selective and Efficient Dehydration of Saccharides to 5-Hydroxymethylfurfural

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Fig. S1-S6

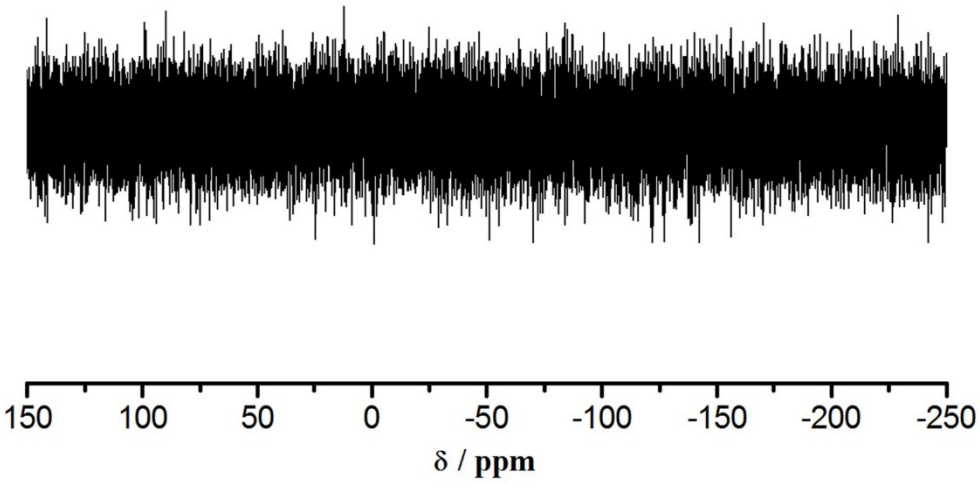

Fig. S1. ^{31}P NMR spectrum of the final washed water. There was no observable phosphorous signals in the ^{31}P NMR spectrum, indicating the absense of free PA in PA-PBI.

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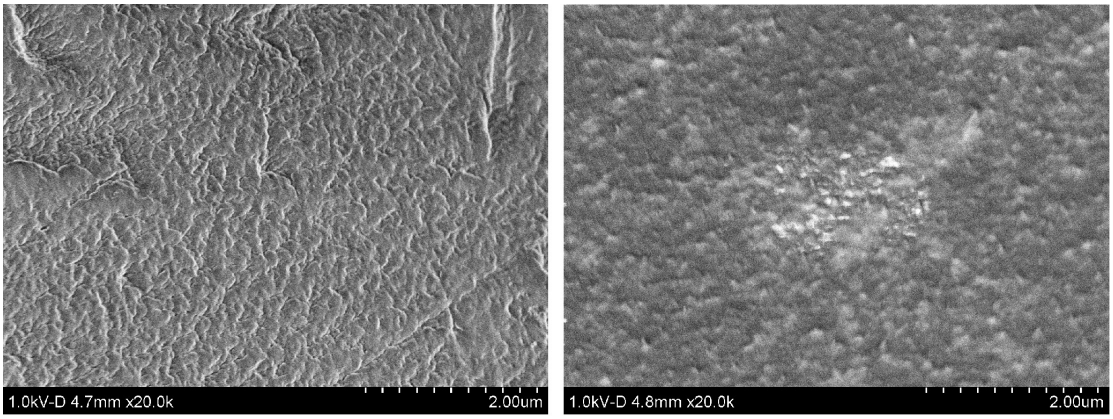

Fig. S2. SEM images of PA-PBI fiber (left: surface morphology of PA-PBI; right: cross section morphology of PA-PBI).

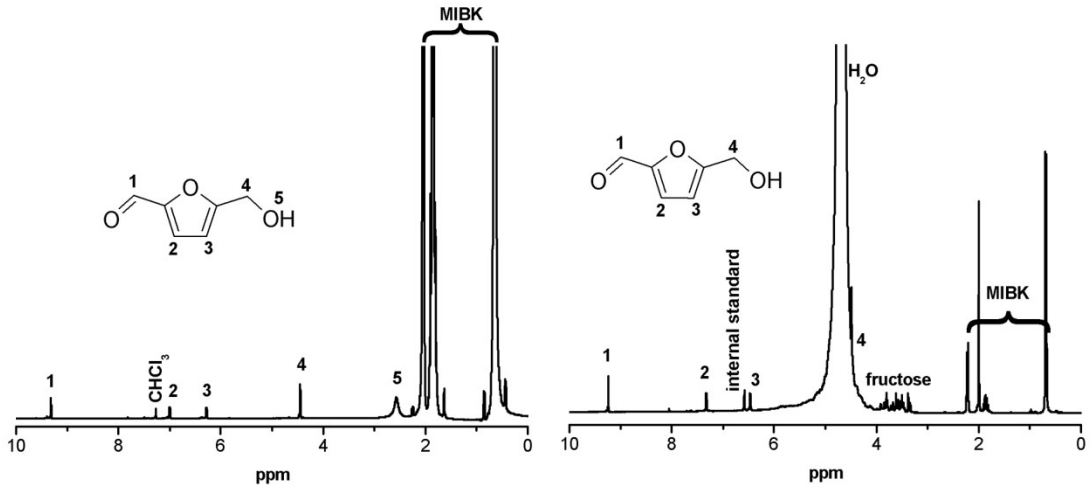

Fig. S3. ^{1}H NMR spectra of reaction mixtures from fructose dehydration (left: organic phase in $CDCl_3$; right: water phase in D_2O). The organic phase only contained HMF and solvents, while the water phase contained both HMF and unreacted fructose.

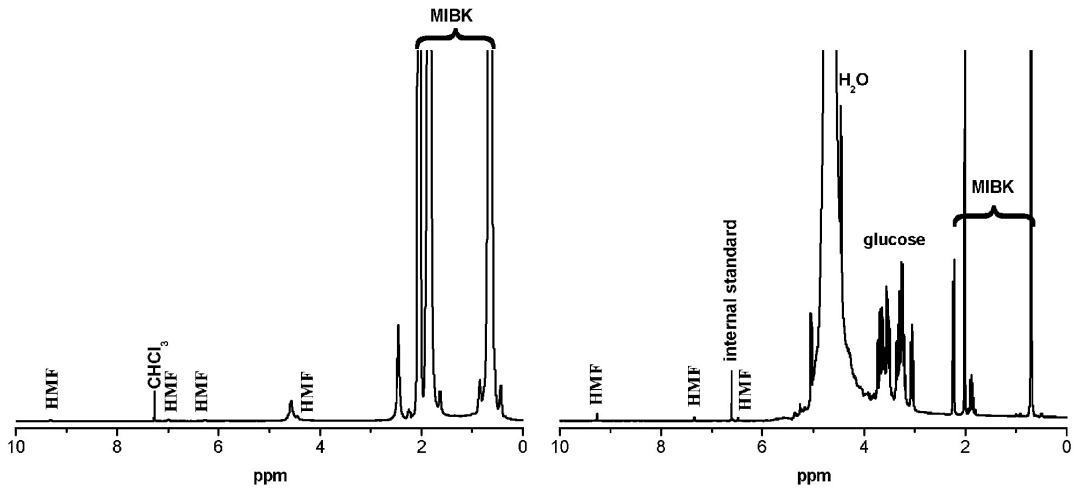

Fig. S4. ^{1}H NMR spectra of reaction mixtures from glucose dehydration (left: organic phase in $CDCl_3$; right: water phase in D_2O). The organic phase only contained HMF and solvents, while the water phase contained both HMF and unreacted glucose

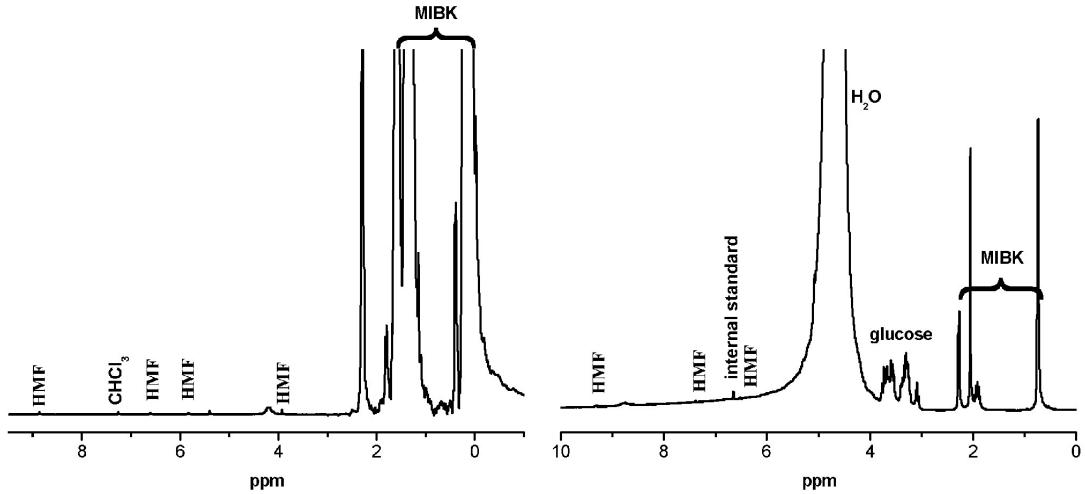

Fig. S5. ^{1}H NMR spectra of reaction mixtures from the treatment of starch catalyzed by PA-PBI (left: organic phase in $CDCl_3$; right: water phase in D_2O). The water phase contained both HMF and glucose. Glucose was observed in the water phase, indicating that starch was first hydrolyzed to glucose which was then dehydrated to HMF.

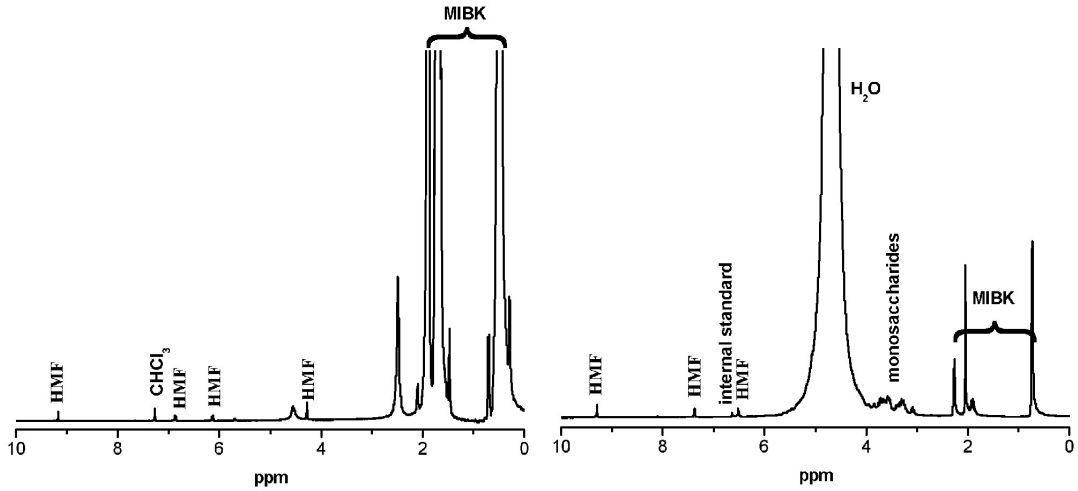

Fig. S6. ^{1}H NMR spectra of reaction mixtures from the treatment of sucrose catalyzed by PA-PBI (left: organic phase in $CDCl_3$; right: water phase in D_2O). Sucrose was first hydrolyzed to glucose and fructose and the monosaccharides were then dehydrated to HMF.

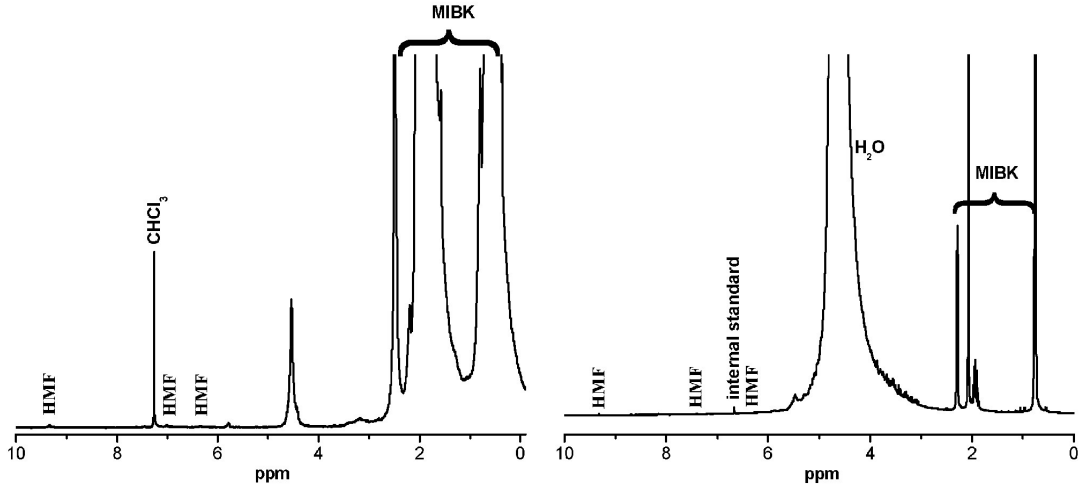

Fig. S7. ^{1}H NMR spectra of reaction mixtures from the treatment of cellulose catalyzed by PA-PBI (left: organic phase in $CDCl_3$; right: water phase in D_2O). Glucose was observed in the water phase, indicating that starch was first hydrolyzed to glucose which was then dehydrated to HMF.