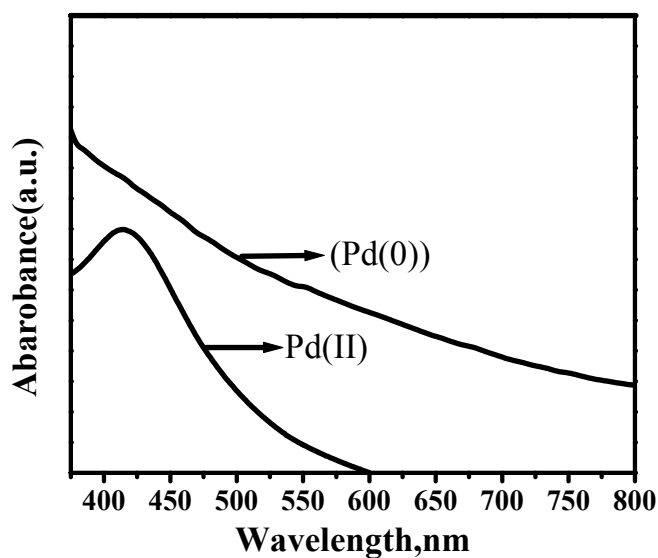


## Supplementary Information

# Trapping Pd (0) in Nanoparticle-Assembled Microcapsules: An Efficient and Reusable Catalyst

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**Figure S1.** UV-Vis spectrum indicating Pd (II) in an aqueous solution of  $\text{Na}_2\text{PdCl}_4$  and UV-Vis-DRS indicating Pd(0) in Pd@MC .

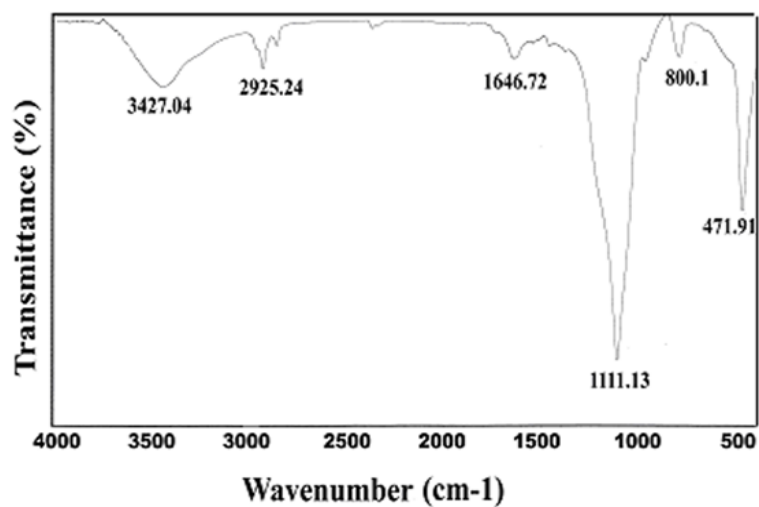


Figure S2. FT-IR spectrum of Pd@MC.

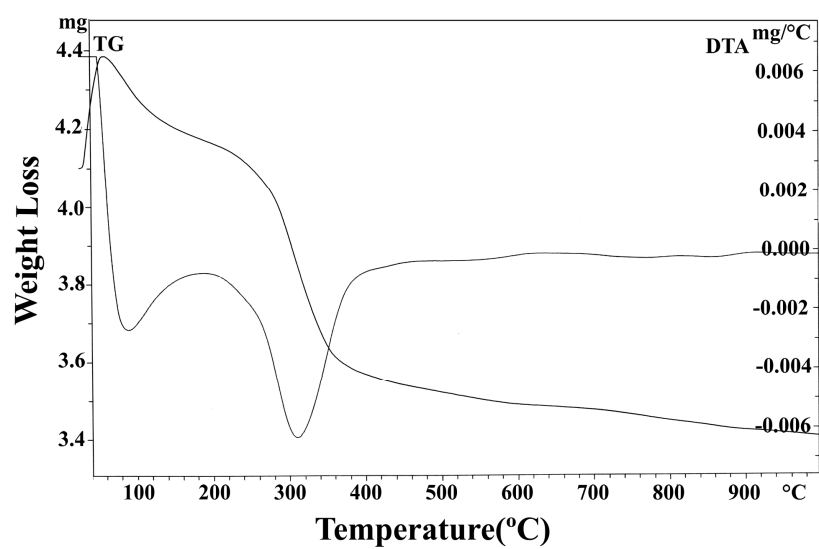
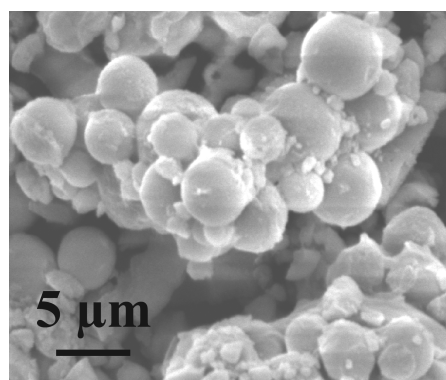


Figure S3. TG-DTA profile of Pd@MC.



**Figure S4.** SEM image illustrating the micron-sized spherical morphology of the recovered Pd@MC catalyst after 3rd run.

**Synthesis of Pd-PLL and its catalytic activity for conversion of nitroarenes:**

For preparing Pd-PLL, 0.25 mL of sodium tetrachloro palladate (0.01M) and 1.0 mL of PLL (2mg mL<sup>-1</sup>, 150 kDa) mixed in 4 ml of water. To reduce the palladium ions 100μL of sodium borohydride (0.01M) was added and stirred for 30min during which the suspension colour turned coffee-brown. Thus synthesized Pd-PLL was further used as a catalyst in hydrogenation of nitroarenes. The reaction conditions were kept similar to that with Pd@MC except that 0.5 ml of Pd-PLL suspension was used as catalyst. The reaction progress was monitored by thin layer chromatography and the conversions obtained by GC analysis are given in Table S1.

**Table S1.** Conversion of various nitroarenes to corresponding amines using Pd-PLL as catalyst.

Substrate	Time (min)	Conversion (%)
nitrobenzene	60	>99
p-chloro nitrobenzene	60	> 99
p-nitro phenol	60	> 99

### Recyclability of the Pd@MC catalyst:

For testing the reusability of the Pd@MC catalyst, it was separated from the reaction mixture by centrifugation and washed with ethyl acetate. The catalytic activity of the recovered catalyst was evaluated for the conversion of nitrobenzene to aniline. The reactions parameters were kept similar to that in the 1<sup>st</sup> reaction cycle. Conversion was measured by gas chromatography.

**Table S2.** Activity of the separated Pd@MC catalyst in hydrogenation of nitrobenzene to aniline after 90 min of reaction time.

Run number	Conversion (%)
1	> 99
2	> 99
3	> 99
4	> 99
5	> 99