

## An Efficient method for N-formylation of amines using nanoporous H-zeolite L as a solid acid catalyst at room temperature under solvent-free condition

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Formamides represent an important class of intermediates in various organic synthesis. They have been widely used in the synthesis of some pharmaceutically important compounds such as Fluoroquinolones [1], 1, 2 dihydro quinolines and Nitrogen based heterocyclic compounds [2]. The synthesized zeolites were characterized by XRD and SEM is shown in Figure 1 and Figure 2.

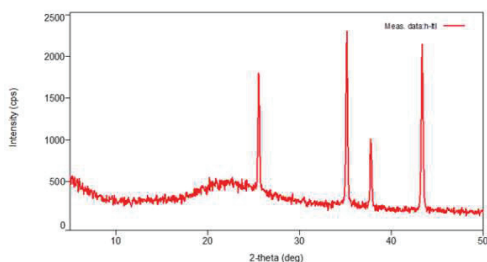


Figure 1: X-ray diffraction patterns of H-form zeolite L

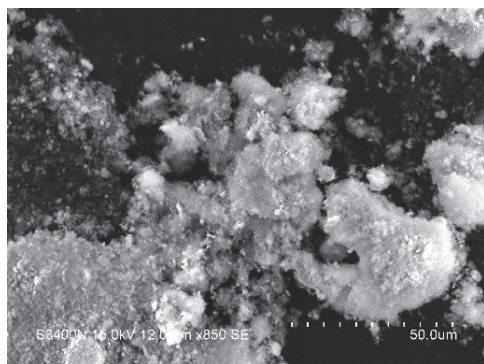


Figure 2: SEM image of H-form zeolite L

The reaction condition occurred in the presence of H-Form Zeolite L, solvent free condition

under room temperature. The effect of catalyst amount of the sample reaction on the activity of the catalyst H-form of Zeolite L was observed under solvent free condition and room temperature is shown in Table 1.

Table 1. Effect of amount of catalyst on the sample reaction on the activity of H-form of zeolite L (solvent: SF)

S. No.	Catalyst (g)	Condition	Time (min)	Yield (%)
1	0.01	R.T	35	57
2	0.02	R.T	30	68
3	0.03	R.T	25	75
4	0.04	R.T	20	85
5	0.05	R.T	15	95
6	0.06	R.T	15	95

It was found that with increase in the amount of catalyst from 0.01g to 0.05g the product yield of the sampled reaction increases after which it remains constant. The reason for increasing catalyst up to 0.05g is mainly due to increase in active sites with increase in the amount of catalyst. After further increase in the catalyst, the additional acid sites cause no effect because the reactants may loss sufficient sites to bind with. After completion of the reaction, the catalyst was separated by simple filtration and then H-form of Zeolite L were washed 2-4 times with ethylacetate and chloroform and dried in an oven at 120°C for 8 h. The catalyst were used several times resulting yield 95%,93%,92%,and 90@% .

### References

1. A. Jackson, O. Meth-Cohn. Chem Soc, Chem Commun, 1995: 131
2. K .Kobayashi, , Chem Lett, 24(1995) 575