

# Synthesis, Characterization and Photocatalytic studies of $\text{Na}_2\text{ZnMnO}_4$

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Several researchers have focused on photocatalytic decomposition of phenols and hexatitanates consists of transition metals such as copper, tin and silver as new semiconducting materials have been used and compared with P25 dugessa by various groups for the decomposition of organic dyes, phenol and oxidative degradation of 1,4-cyclohexadiene. The photocatalytic activity of these materials can be improved further by the introduction of some cation and/or anion in the lattice framework. Recently, ravi et al. have developed a new  $\text{Ag}^+$  and  $\text{Cu}^{2+}$  incorporated  $\text{Na}_2\text{Ti}_3\text{NO}_{6-x}$  layered oxide photocatalyst, for the degradation of organic dyes under visible light. Further, it was also published that anion doping (N, C, and S etc.) into the  $\text{TiO}_2$  scaffold has shown a valuable manipulation on the photocatalytic activity

In the present work, we designed a new type of layered titanate,  $\text{Na}_2\text{ZnMnO}_4$ , using the sol gel method. Here we report, the preparation and characterization of  $\text{Na}_2\text{ZnMnO}_4$  and photocatalytic studies of substituted benzylalcohol through  $\text{SP}^3$  C-H bond oxidation under visible light followed by substituted 2-aminophenol condensation to obtain the 2-phenylbenzo derivatives. All the products were analyzed by IR, mass,  $\text{C}^{13}$  and NMR spectral data. The reaction pathway was established based on the experimental data.

## General procedure for the synthesis of compound:

