of ATP, it is further confirmed that when the content of ATP was about 25%, the morphology of nano-MgO particles were sphere shapes, the template effected seems little. when the ATP content was 90%, As show in Figure 4.-b) crystals of nano-MgO tended to become rod-like or needle-like shape, and grow on the attapulgite fiber very similar with the work about CeO_2 nanotubes facilely via a layer-by-layer deposition approach using modified attapulgite as hard template, a simple and inexpensive way to prepare oxide nanotubes on a large scale by taking advantage of natural clay as sacrificial template[12]. In this paper, during the process of form of MgO, ATP clay doubtless plays an important role on its size and shape. The formation of MgO consists of two process, one is the thermal decomposition of $Mg(OH)_2$, another is crystal transformation from $Mg(OH)_2$ to MgO polycrystalline which is a amorphous process, and attapulgite maybe directly affect the change of crystal. And more, the ATP template effect is getting stronger with the increase of ATP in the form of MgO, but the reason why the morphology of nano-MgO particles are changed from sphere shapes to rod-like or needle-like shapes with the increasing of ATP content is not clear, it needs further research.

IV. CONCLUSION

In this paper, Size and feature controlled nano-MgO were synthesized successfully by using ATP as hard template. The content of ATP affects the shape and the size of nano-MgO crystals. It was a new way to obtain MgO with different morphology. ATP can be used as template to prepare massively nano-MgO crystallites of different size and morphology controlled, which is firstly reported. It needs more research in the aspect of induction mechanism and industrial applications.

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