Electronic Supplementary Information:

Green co-precipitation byproduct-assisted thermal conversion route to submicron Mg$_2$B$_2$O$_5$ whiskers

Wancheng Zhu$^{*,1,2}$, Qiang Zhang$^2$, Lan Xiang$^*$$^,^2$ and Shenlin Zhu$^2$

1. Department of Chemical Engineering, Qufu Normal University, Shandong 273165, China
2. Department of Chemical Engineering, Tsinghua University, Beijing 100084, China

*Corresponding authors. Email: zhuwancheng@tsinghua.org.cn, xianglan@mail.tsinghua.edu.cn
Preparation of various precursors and comparative experiments:

To investigate the effect of washing modes on the final calcined product, the as-obtained cake was pounded to pieces and immersed in 200 mL DI water for complete cleaning for 15 min and then filtered again before drying (Precursor-II), or simply and directly dried without washing (Precursor-III), or showered with alcohol instead of DI water before drying (Precursor-IV), with other conditions kept the same. For comparison, the white slurry originated from room temperature coprecipitation was directly transferred into the crucible and experienced calcination. Besides, a comparative experiment similar to the traditional flux method\textsuperscript{[12, 21]} for Mg\textsubscript{2}B\textsubscript{2}O\textsubscript{5} whiskers was also carried out (900 °C, 1.5-6.0 h) to see the facile post treatment of the calcined product in the present case, using the same reactants however assisted by additionally introduced abundant flux agent (molar ratio of additional NaCl:MgCl\textsubscript{2} ca. 3:2).
Figure S1. TEM image (a), SAED pattern (inset), and TGA (b) results of Precursor-I derived from the room temperature coprecipitation.
Figure S2. Composition (a) and corresponding morphology (b-d) of the products calcined at different temperatures, derived from Precursor-IV. Temperature (°C): (a1,b)-700; (a2,c)-800; (a3,d)-900.