Electronic Supplementary Information for Dalton Transactions

Synthesis and characterization of nanostructured bismuth selenide thin films

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The film formed on side A (Figure S1) is composed of two different parts: α and β. Part α is composed of coalescent Bi_2Se_3 film, which is similar to the structure showing in the Figure 4 in the text. Part β is composed of Bi_2Se_3 lamella (assembled into flower structures), which is consistent with the top view showing in the Figure 1 in the text. So the films formed on side A is composed of coalescent Bi_2Se_3 film on the interface between the substrate and the solution, and flower-like structures formed throughout the solution. The flower-like structures contains many voids, which will cover the intrinsic transport properties of the coalescent Bi_2Se_3 film and deteriorate the thermoelectric performance remarkably. On the other hand, the films formed on side B only contains coalescent Bi_2Se_3 film so the discussion in the text is mainly based on the films formed on side B

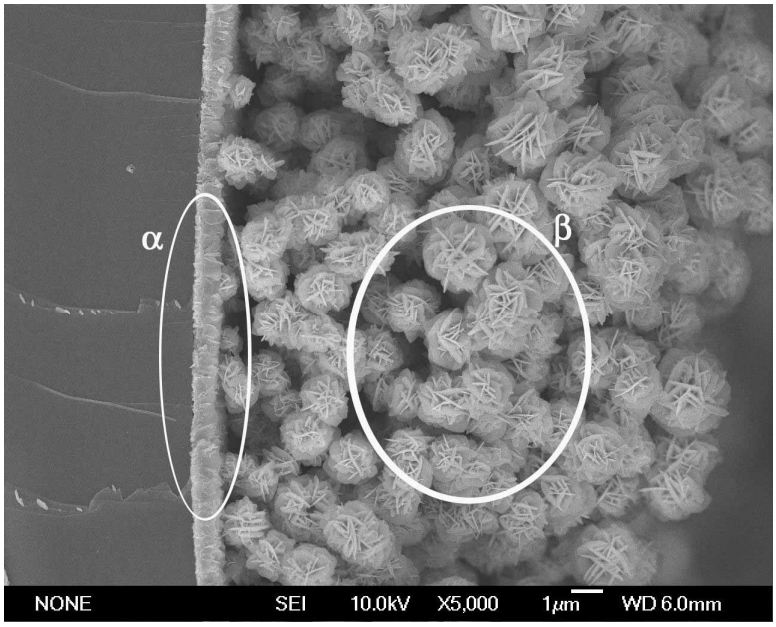

Figure S1 Cross-sectional SEM of the films formed on side A with Bi3+/NTA equaling 1:20.