

Thermoelectric Properties of Bi-doped Ba₂CoRuO₆ Double Perovskite Oxides for Efficient Energy Harvesting

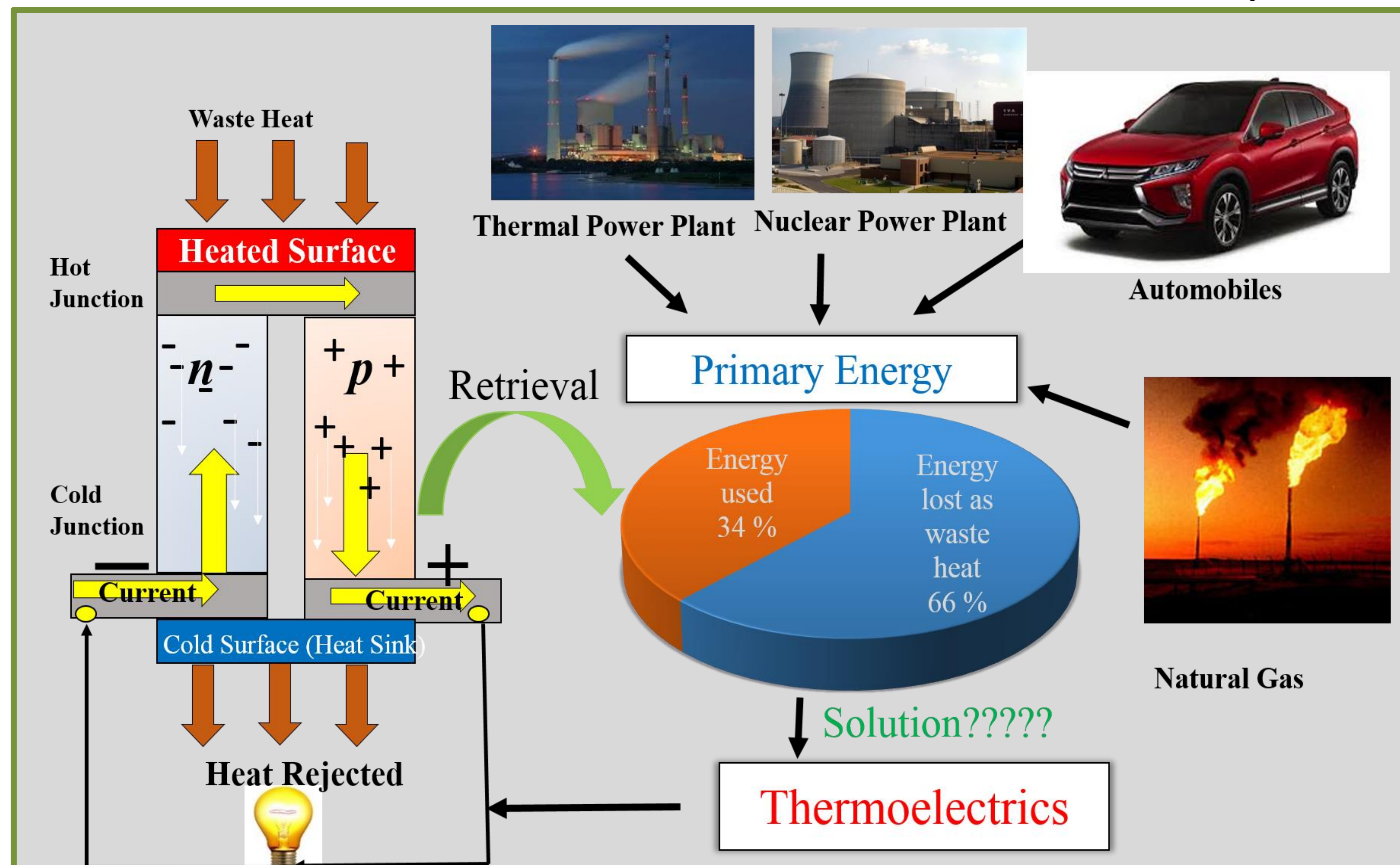
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Thermoelectric Figure of Merit (zT)

- ❖ Alloys [BiTe, PbTe & PbSe]
- ❖ Half-Heusler [MnSn (*n*-type) & MCoSb (*p*-type)]
- ❖ Skutterudites [CoSb₃ & LaFe₃CoSb₁₂]

Issues

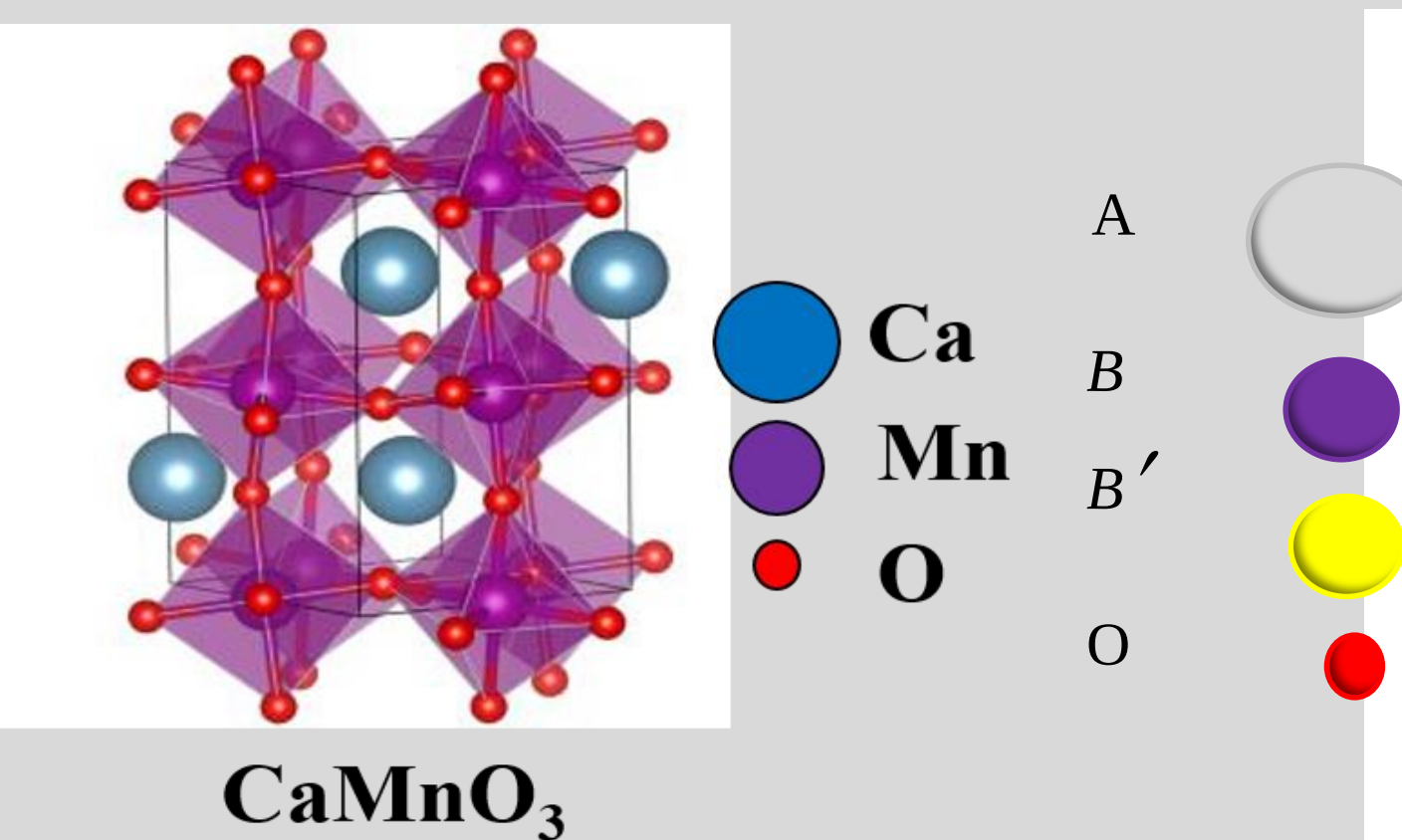
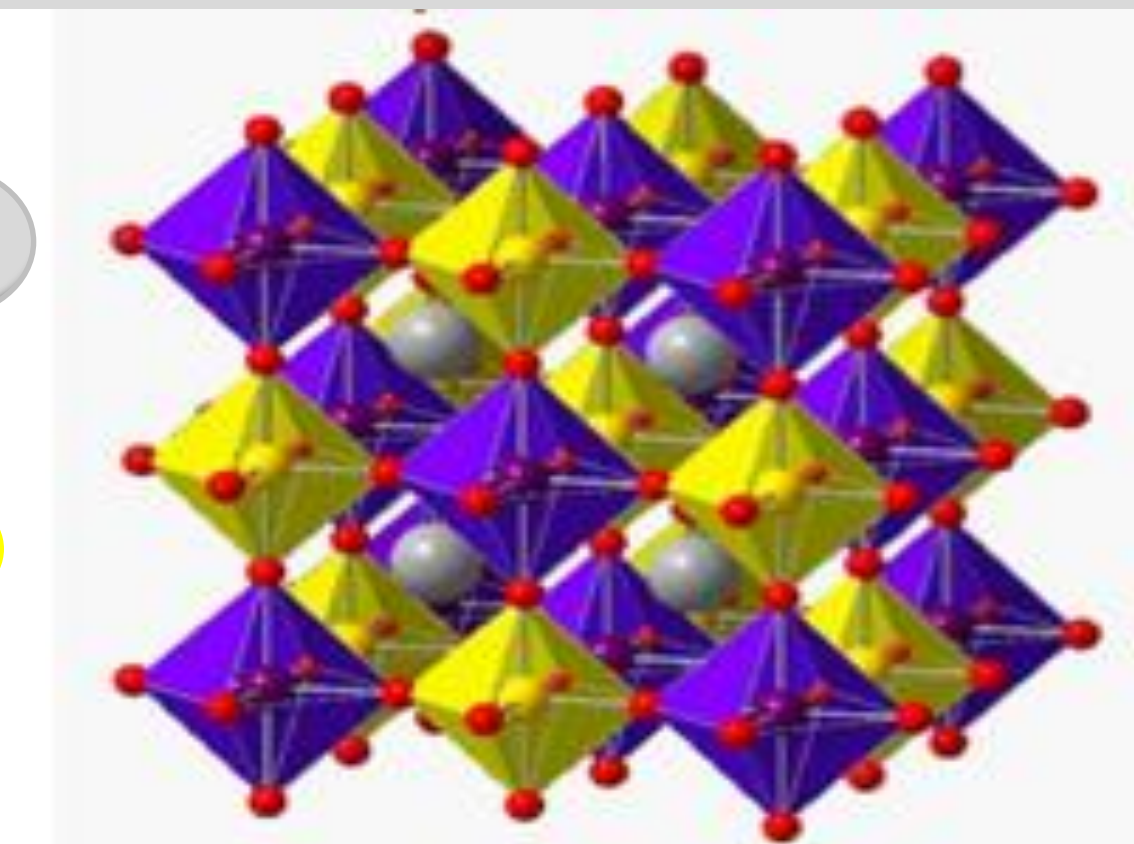
- Toxic
- Stability Issues
- Expensive

Why Oxides?

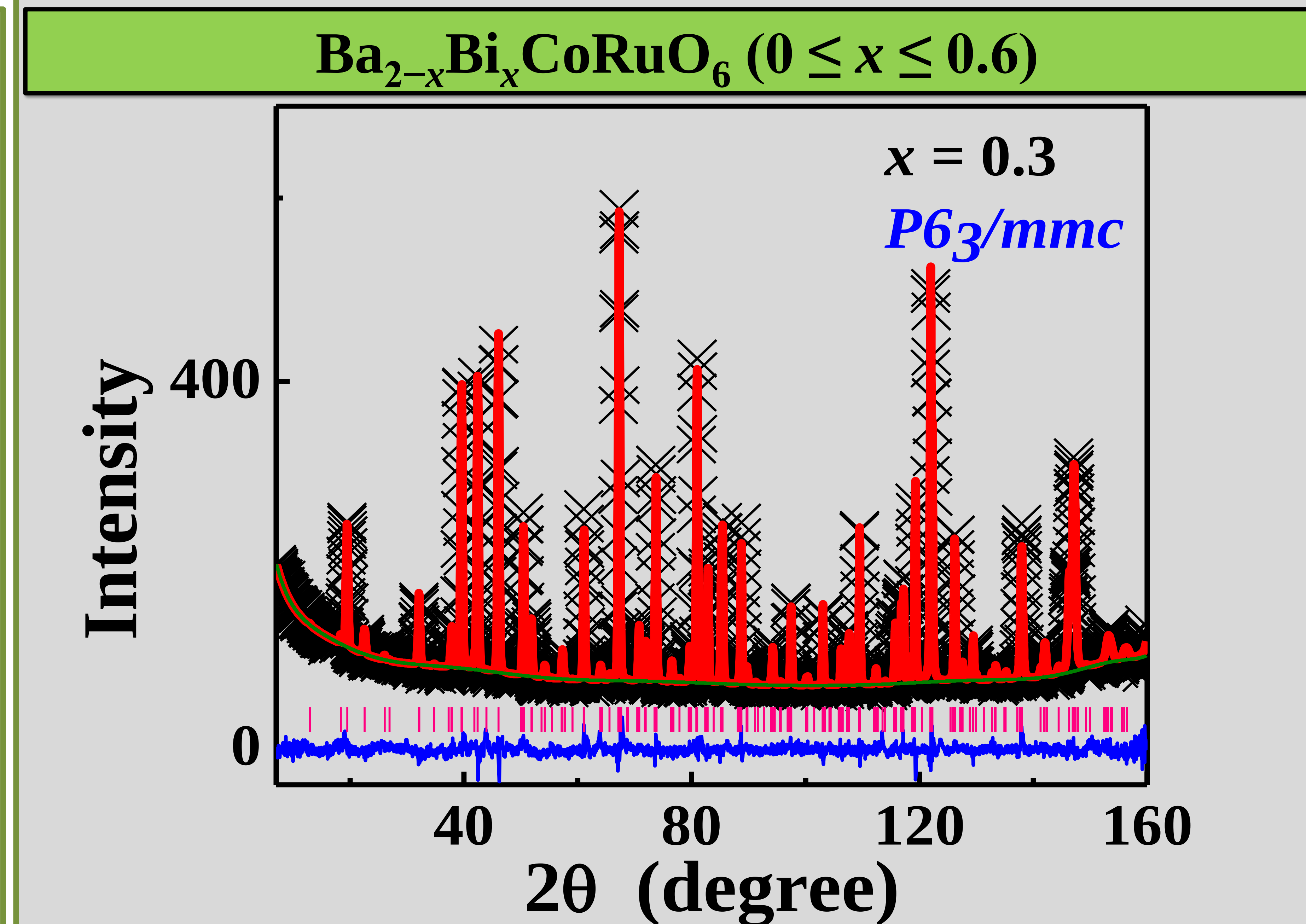
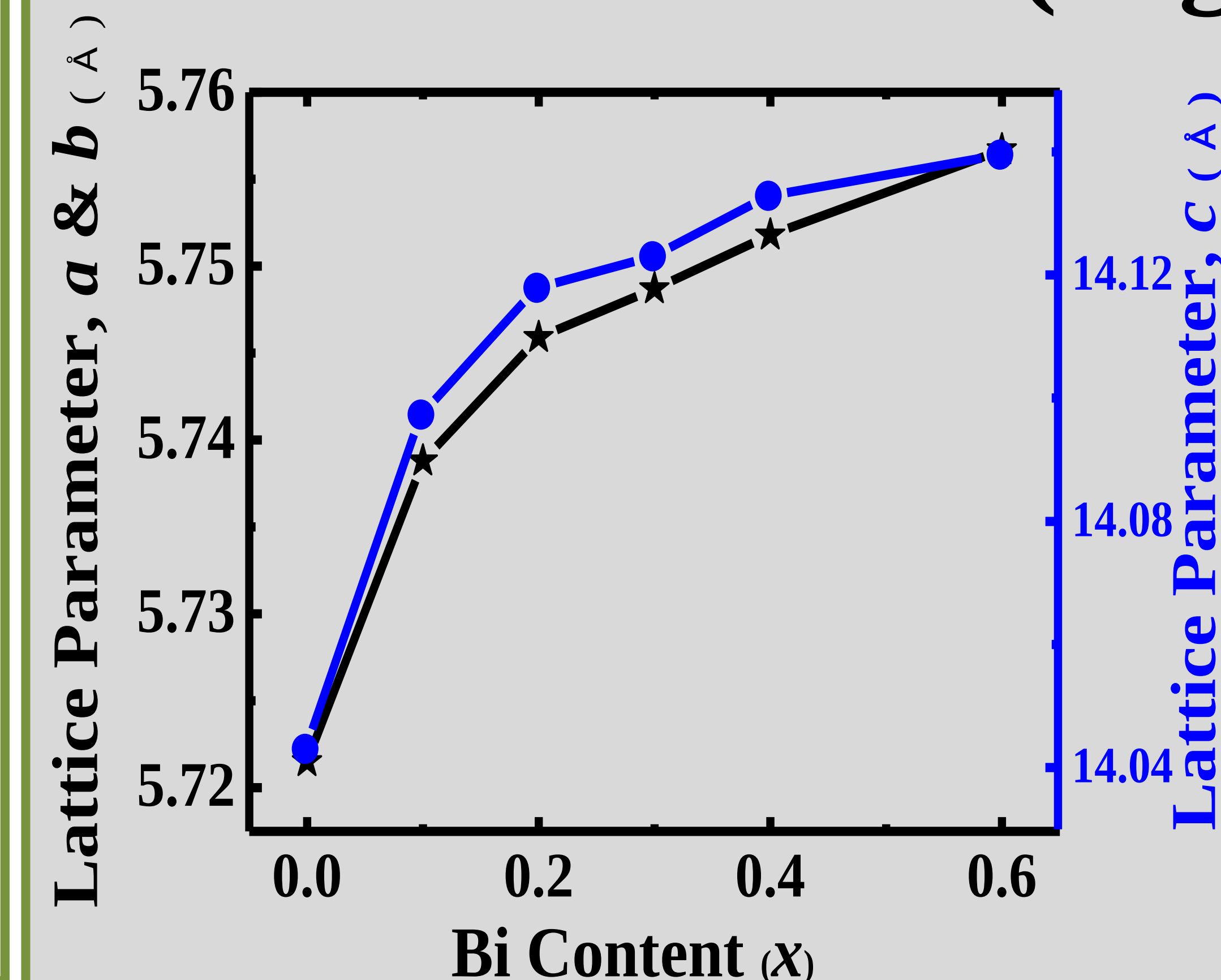
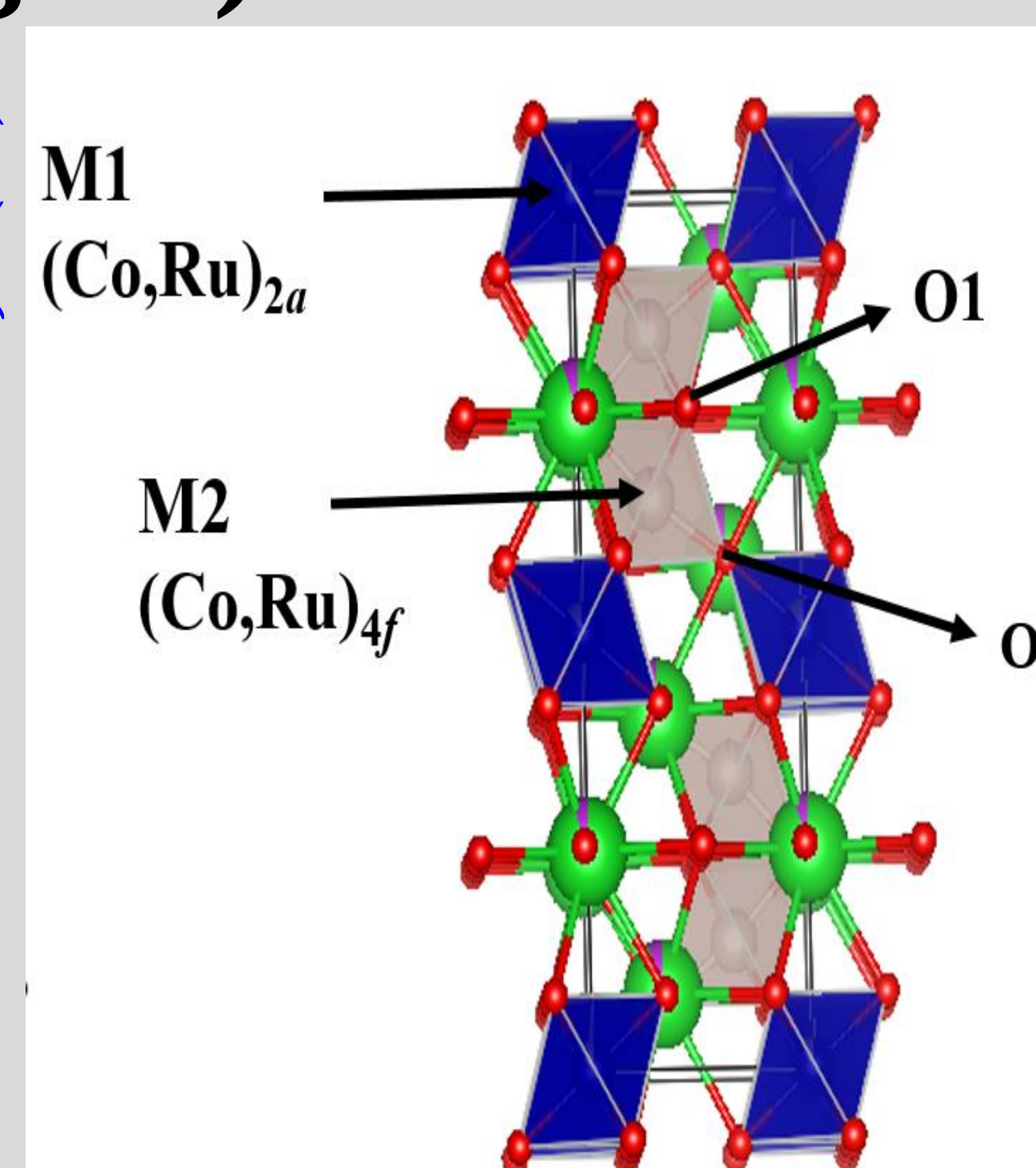
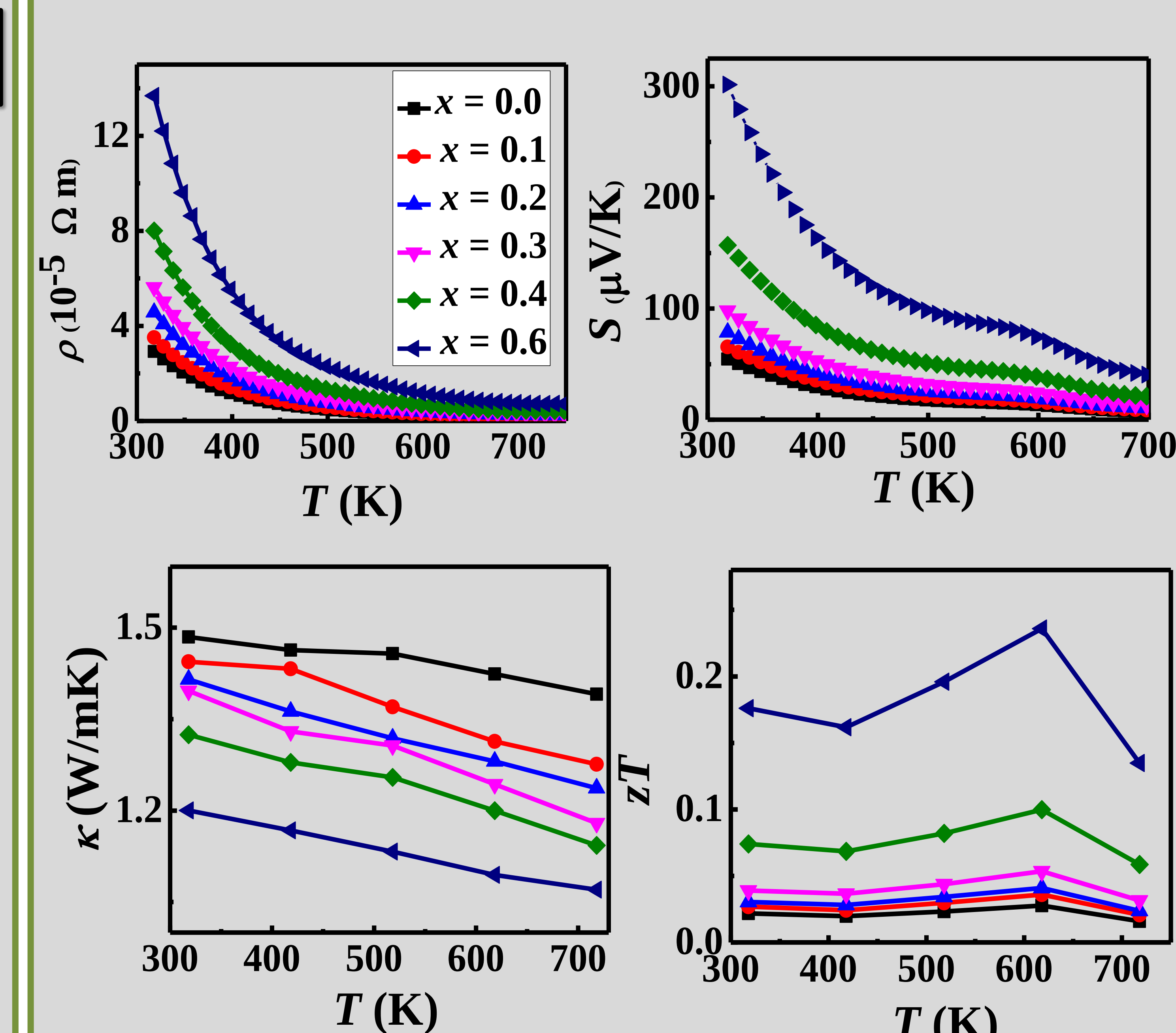
- Non Toxic
- High Stability
- Cheap

Perovskite Oxides

Double Perovskite Oxides



A = Ca, Sr & Ba
B = Mn, Co, Fe & Ni
3d transition metals
B' = Ru, Mo, Re & W
4d & 5d transition metals



Conclusions

- Powder X-ray diffraction data confirmed the phase purity of all samples.
- The observed power factor (*PF*) and thermoelectric figure-of-merit (*zT*) of $4.17 \times 10^{-4} \text{ W/m} \cdot \text{K}^2$ and ~ 0.23 , respectively at 618 K for $x = 0.6$ sample are higher than the parent Ba₂CoRuO₆ system.

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