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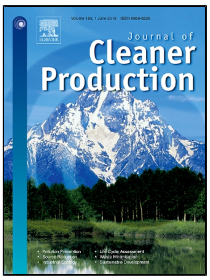

Distribution of Trace Elements during Coal Gasification：The Effect of Upgrading Method

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Distribution of Trace Elements during Coal Gasification：The Effect of Upgrading Method

Guanyi Chen[a,b,c], Yunan Sun[a], Beibei Yan[a,d]*, Ruilei Yang[a], Bin Liu[e], Zhanjun Cheng[a,c], Wenchao Ma[a,c]

[a] *School of Environmental Science and Engineering/State Key Lab of Engines, Tianjin University, Tianjin 300072, China*

[b] *School of Science, Tibet University, No.36 Jiangsu Street, Lhasa 850012, Tibet Autonomous Region, China*

[c] *Tianjin Engineering Center of Biomass-derived Gas/Oil Technology, Tianjin300072, China*

[d] *Key laboratory of Efficient Utilization of Low and Medium Grade Energy (Tianjin University), Ministry of Education, School of Mechanical Engineering, Tianjin 300072, China*

[e] *Qingdao Institute for Ocean Engineering of Tianjin University, Qingdao 266237, China*

Abstract：

A combination of upgrading and gasification process seems quite promising to cleanly utilize low-rank coal (LRC). The distribution of trace elements in this process has rarely been researched. In this study, four upgrading methods for LRC (evaporative drying, pyrolysis upgrading, microwave drying and hydrothermal dewatering (HTD)) were used and then the upgraded coal (UC) was gasified with investigation on the distribution and emissions of 13 trace elements (beryllium, vanadium, chromium, manganese, cobalt, nickel, copper, zinc, arsenic, selenium, cadmium, mercury and lead). The relative enrichment factors (RE) were introduced to quantitatively compare four different upgrading methods. The results show that gasification of UC helps controlling trace element of LRC by reducing its contents in feedstock and enhancing the ash enrichment. Different upgrading methods have their specific effects on different trace elements, respectively. Microwave drying presents to be best for most trace elements