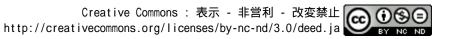
## 高性能高温集塵技術の開発

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雑誌名	平成9(1997)年度 科学研究費補助金 基盤研究(A)
	研究成果報告書概要
巻	1996 1997
ページ	2p.
発行年	1999-03-15
URL	http://doi.org/10.24517/00066092



## 1997 Fiscal Year Final Research Report Summary

## Development of High Performance Filtration System for Hot Gas Cleaning

**Research Project** 

Project/Area Number
08558064
Research Category
Grant-in-Aid for Scientific Research (A)
Allocation Type
Single-year Grants
Section
展開研究
Research Field
環境保全
Research Institution
Kanazawa University
Principal Investigator
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Project Period (FY)
1996 – 1997
Keywords

As filtration goes on, dusts are collected on a ceramic filter element and form a dust cake layr on it. The filtration conditions and particle properties affect the accumulated amount and its shape on the element. Once dust cake is formed, the appearance of the filter changes and thus the flow around it also changes. This means that both flow field and the shape of dust layr interact with each other and they change with time, i.e., filtration performance changes with time. To elucidate the change in the flow around the filter element and accumulation process with time, a new analysis method has been proposed. Its capability has been demonstrated by solving them at filtration velocity of 5 Ncm/s varying gas temperature from 293 to 1123 K, pressure from 1 to 10 atmosphere and packing from 0.03 and 0.12.

As a result, it is found that dust cake forms a non-uniform layr on the element at any filtration condition, i.e., the maximum deposition appears at the front of the element and the minimum is observed around 120-150 degree from the front. It shifts forward as temperature rises but backward as pressure rises. With the increasing pressure, temperature and packing density, the uniformity of the dust layr increases. Suction velocity to the element, i.e., filtration velocity, decreases with time because of the increase in the resistance due to the accumulated dust. This also results in the suppression of accumulation rate of dust on the element with time. This effect is significant at high pressure and high temperature. Furthermore, pressure drop across the element increases non-linearly with time and it shows higher drops when temperature and pressure are high.

## Research Products (8 results)

			Ot	her		
	All	P	ublicati	ons (8	resu	lts)
[Publications] 金岡 千嘉男 他2名: "CLEANING OF DUST FROM PULSE JET BAG FILTER" '96CHINA-JAPAN SYMPOSIUM ON PAR (1996)	₹ŢĨĊĹ	UOL	.0GY. 10	)4-108		~
[Publications] 金岡 千嘉男 他2名: "ACCIUMULATION AND RELEASE OF DUST FROM RIGD CERAMIC FILTER ELEMENT" 3rd In Gas Cleaning at High Temperatures. 183-192 (1996)	terna	atio	nal Sym	posium	on	*
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[Publications] 金岡 千嘉男 他2名: "セラミックフィルタのダスト堆積分布の検討" 粉体工学会1997年秋期研究発表会講演論文集. 177-	-181	1 (19	997)			~
[Publications] C.Kanaoka, T.Kishima and M.Furuuchi: "Cleaning of Dust from Pulse Jet Bag Filter" '96 China-Japan Symposiu Beijing, China. 104-108 (1996)	ım on	n Pa	articuolo	gy,		~
[Publications] C.Kanaoka, T.Kishima and M.Furuuchi: "Accumulation and Release of Dust from Rigid Ceramic Filter Element" Symposium and Exhibition on Gas Cleaning at High Temperature. 183-192 (1996)	Thire	rd Iı	nternatio	onal		~
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[Publications] C.Kanaoka, T.Kishima: "Mana Amornkitbamrung, Thickness Distribution of Dust cake on a Candle Type Ceram Meeting of Soc.Powder Technol., Japan. 177-180 (1997)	ic Fili	ilter	" 1997 <i> </i>	۱utumn		~

URL: https://kaken.nii.ac.jp/report/KAKENHI-PROJECT-08558064/085580641997kenkyu\_seika\_hokoku\_

Published: 1999-03-15