

- 3) 森永謙二, 神山宣彦: 石綿取扱業務の健康管理, (財)産業医学振興財団; 東京, 1993, pp. 141-166.
- 4) Berry G: Mortality of workers certified by pneumoconiosis medial panels as having asbestosis. *Br J Ind Med*; 38, 130-137. 1981.
- 5) Gormley IP, Bolton RE, Brown GM, Davis JMG & Wright A: Some observations on the in vitro cytotoxicity of silicon carbide whisker prepared by the wet dispersion process. *Environ Health Perspect*; 51, 35-39, 1983.
- 6) Koshi K & Sakabe H: Effect of asbestos dusts on the cultured macrophages. *Ind Health*; 10, 16-23, 1972.
- 7) 労働安全衛生法施行令の一部を改正する政令; 257, 2006. 8. 2.
- 8) 石綿障害予防規則等の一部を改正する省令; 147, 2006. 8. 2.
- 9) IARC Working Group on the Evaluation of Carcinogenic Risks to Humans. Man-made vitreous fibers. *IARC Monogr Eval Carcinog Risks Hum*. 2002; 81: 1-381
- 10) Keira T, Okada M, Katagiri H, Aizawa Y, Okayasu I & Kotani M. Magnetometric evaluation for the effect of chrysotile on alveolar macrophages. *Tohoku J Exp Med* 1998; 186: 87-98.
- 11) Kudo Y., Watanabe M., Okada M., Shinji H., Niitsuya M., Satoh T., Sakai Y., Kohyama N., Kotani M. and Aizawa Y. :Comparative cytotoxicity study of rock wool and chrysotile by cell magnetometric evaluation. *Inhal. Toxicol*, 15:1275-1295, 2003.
- 12) Watanabe M, Okada M, Aizawa Y, Sakai Y, Yamashina S & Kotani M. Magnetic evaluation for the effects of silicon carbide whisker on alveolar macrophages. *Ind Health* 2000; 38: 239-245.
- 13) Watanabe M, Okada M, Kudo Y, Tonori Y, Nitsuya M, Sato T, Aizawa Y & Kotani M Differences in the effects of fibrous and particulate titanium dioxide on alveolar macrophages of fischer 344 rats. *J Toxicol Environ Health* 2002; 44: 321-328.
- 14) Shinji H, Watanabe M, Kudo Y, Nitsuya M, Masashi T, Satoh T, Sakai Y, Kotani M, Aizawa Y: The cytotoxicity of microglass fibers on alveolar macrophages of fischer 344 rats evaluated by cell magnetometry, cytochemistry and morphology. *Environ. Health Prev. Med* 2005; 10:111-119.
- 15) Kohyama N, Tanaka I, Tomita M, Kudo M & Shinohara Y: Preparation and Characteristics of Standard References Samples of Fibrous Minerals for Biological Experiments. *Industrial Health* 1997; 35, 415-432.
- 16) Kudo Y., Sibata K., Miki T., Ishibashi M., Hosoi K., Sato T.,

- Kohyama N. and Aizawa Y. : Behavior of new type of rock wool (HT Woll) in lungs after exposure by nasal inhalation in rats. *Environ. Health Prev. Med.*, 10 (5) : 239-248, 2005. 9.
- 17) David M. Bernstein and Juan M. Riego Sintes : METHODS FOR THE DETERMINATION OF THE HAZARDOUS PROPERTIES FOR HUMAN HEALTH OF MAN MADE MINERAL FIBERS (MMMF). European Commission Joint Research Centre. Institute for Health and Consumer Protection, Unit : Toxicology and Chemical substances. European Chemicals Bureau, April 1999.
- 18) Reference methods for measuring airborne man-made mineral fibers (MMMF) Regional Office for Europe World Health Organization, Copenhagen: P999A PB Rep (USA) [PB-86-174596], 65p, 1985.
- 19) Hesterberg TW, Hart GA: Synthetic Vitreous Fibers: A Review of Toxicology Research and Its Impact on Hazard Classification. *Critical Reviews in Toxicology* 2001;31 (1) : 1-53.
- 20) Cohen D : Ferrimagnetic contamination in the lungs and other organs of the human body. *Science* 180:745-748, 1973
- 21) Aizawa Y, Takata T, Hashimoto K, Tominaga M, Tatsumi H, Inokuchi N, Kotani M and Chiyotani K: Effects of different on magnetometric behavior of iron particles in rabbit lungs: *JITOM*. 1991; 39:18-23.
- 22) Aizawa Y, Takata T, Hitomi K, Tatsumi H, Inokuchi N, Kotani M and Chiyotani K: Magnetometric Evaluation of the Effects of gallium Arsenide on the Clearance and Relaxation of Iron Particles: *Industrial Health*. 1993; 31, 143-153.
- 23) 岡田充史, 計良徹, 相澤好治, 荻部ひとみ, 新津谷真人, 杉浦由美子, 眞下紀美代, 小谷誠 : 日本職業災害医学会会誌. 1996 ; 44 : 10, 682-687.

Table 1. NT 社製 RW の化学組成

化 学 組 成 (%)									
	SiO ₂	CaO	Al ₂ O ₃	MgO	Fe ₂ O ₃	TiO ₂	Na ₂ O	K ₂ O	S
RW	40	37	14	6	0.3	0.6	—	—	0.6

Table 2. NC 社製 RW の化学組成

化 学 組 成 (%)									
	SiO ₂	CaO	Al ₂ O ₃	MgO	Fe ₂ O ₃	TiO ₂	Na ₂ O	K ₂ O	S
RW	39	33	14	5	1.8	—	—	—	0.6

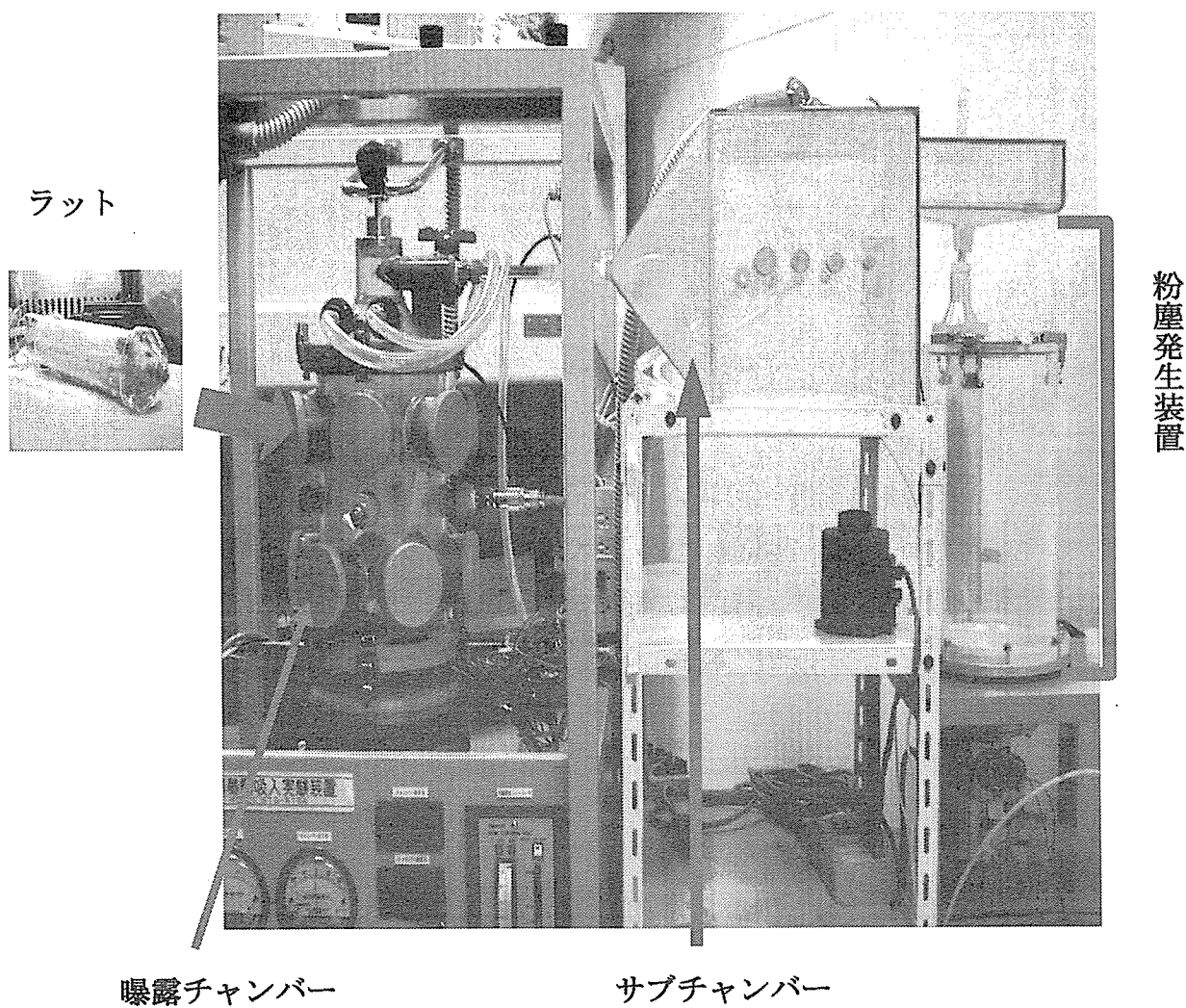


Figure 1. 鼻部吸入曝露実験装置

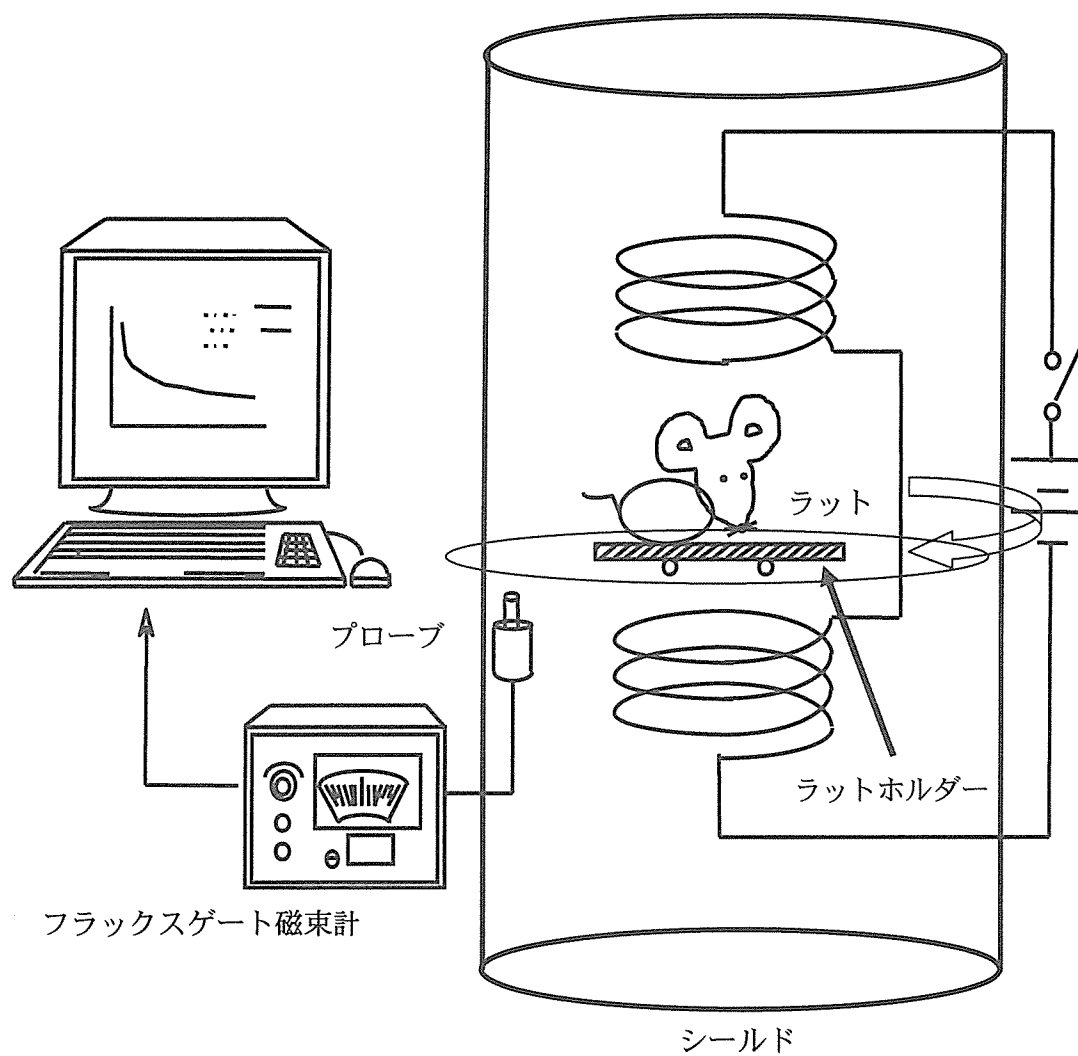


Figure 2. 肺磁界測定装置

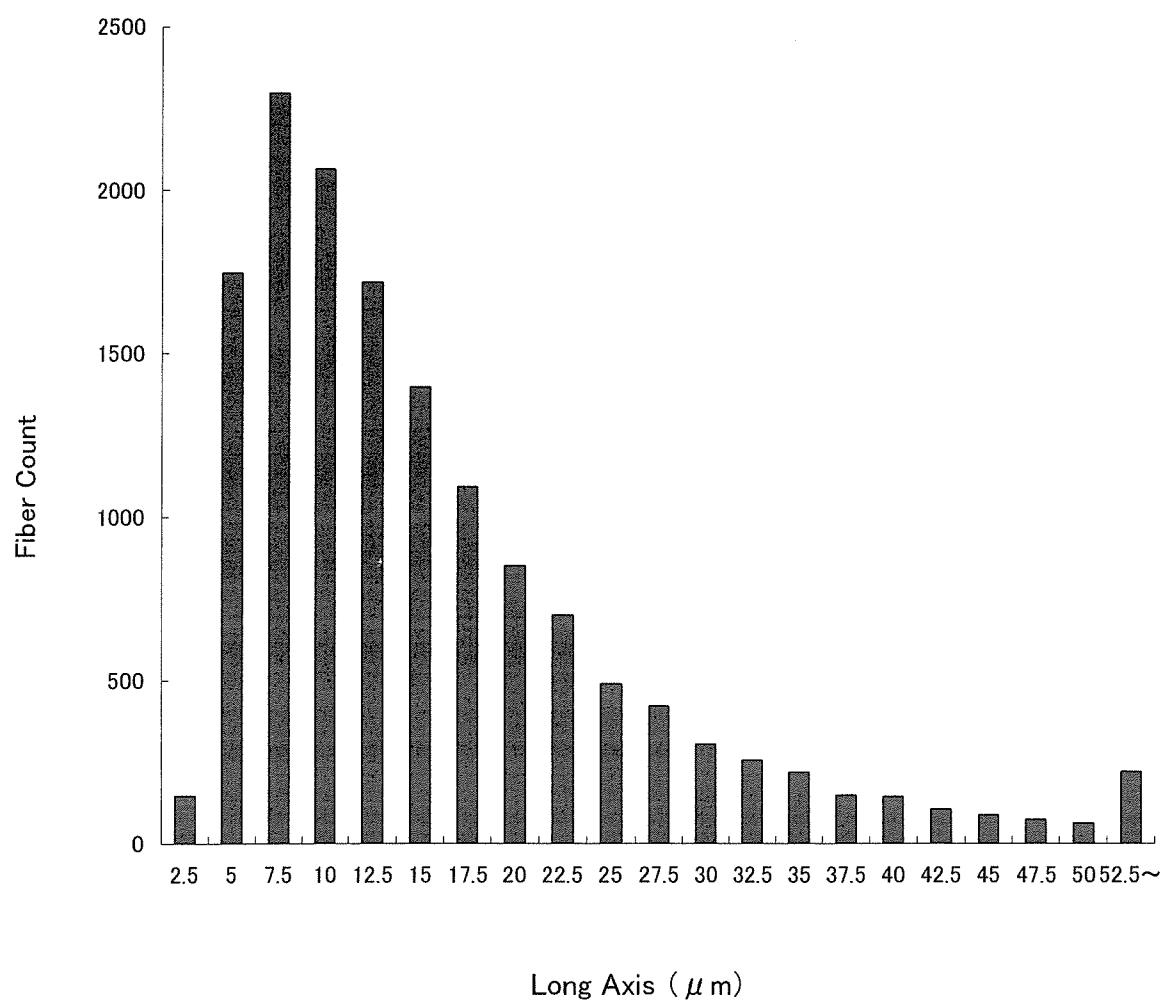


Figure 3. 曝露チャンバー内の発塵繊維の長径の分布
(NT 社製 RW)

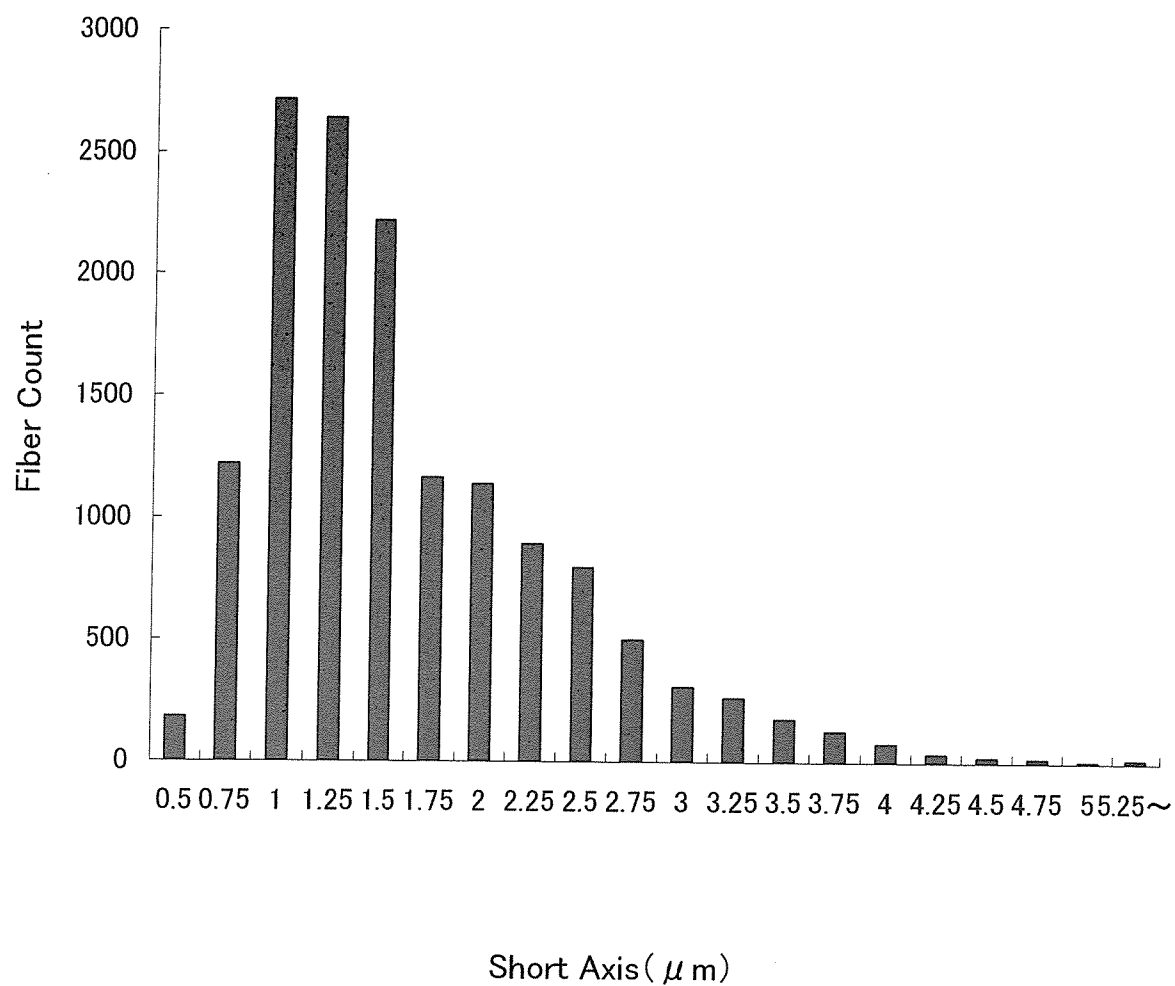


Figure 4. 曝露チャンバー内の発塵繊維の短径の分布
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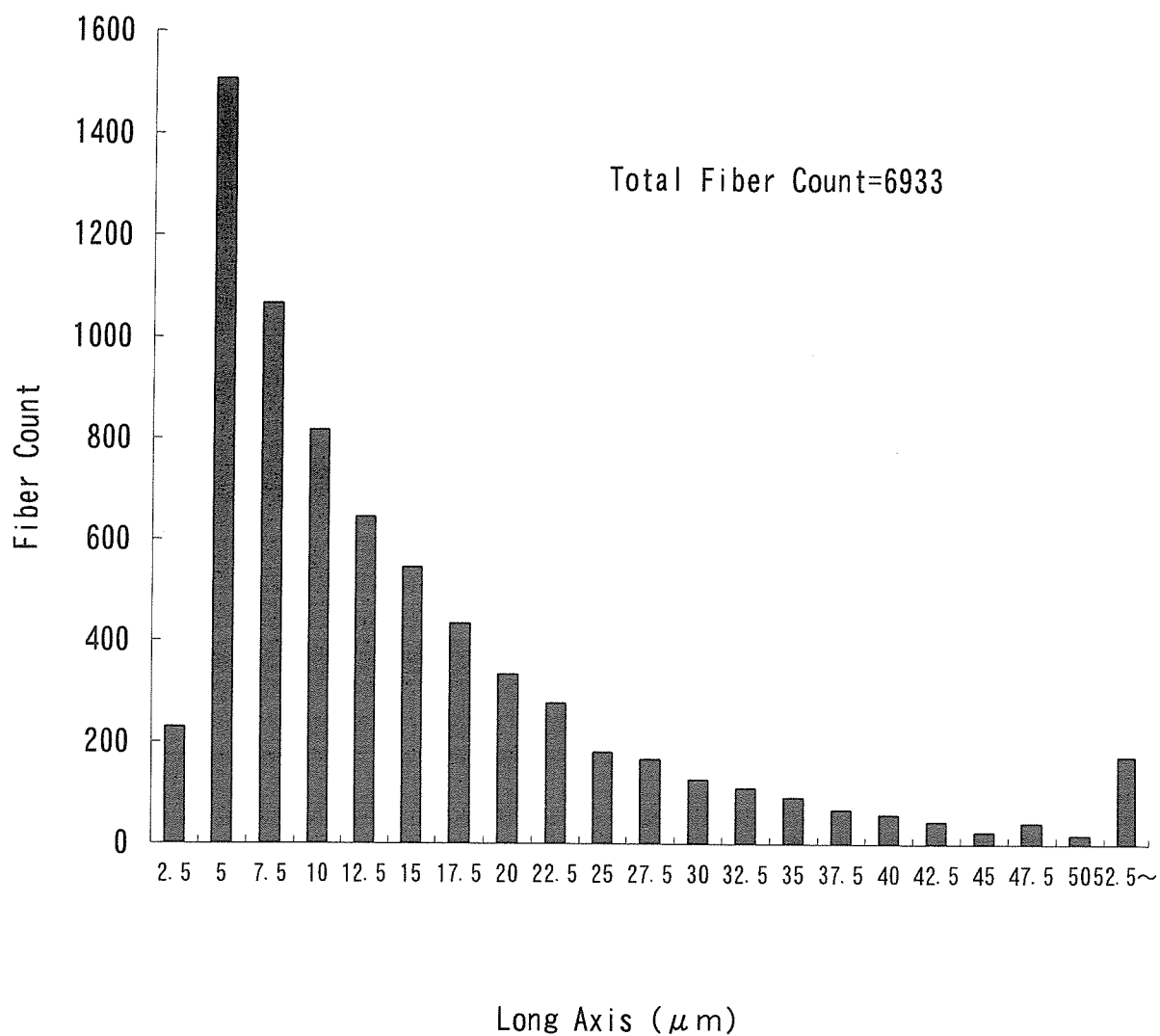


Figure 5. 肺磁界測定法における曝露チャンバー内の発塵繊維の
長径の分布 (NC 社製 RW)

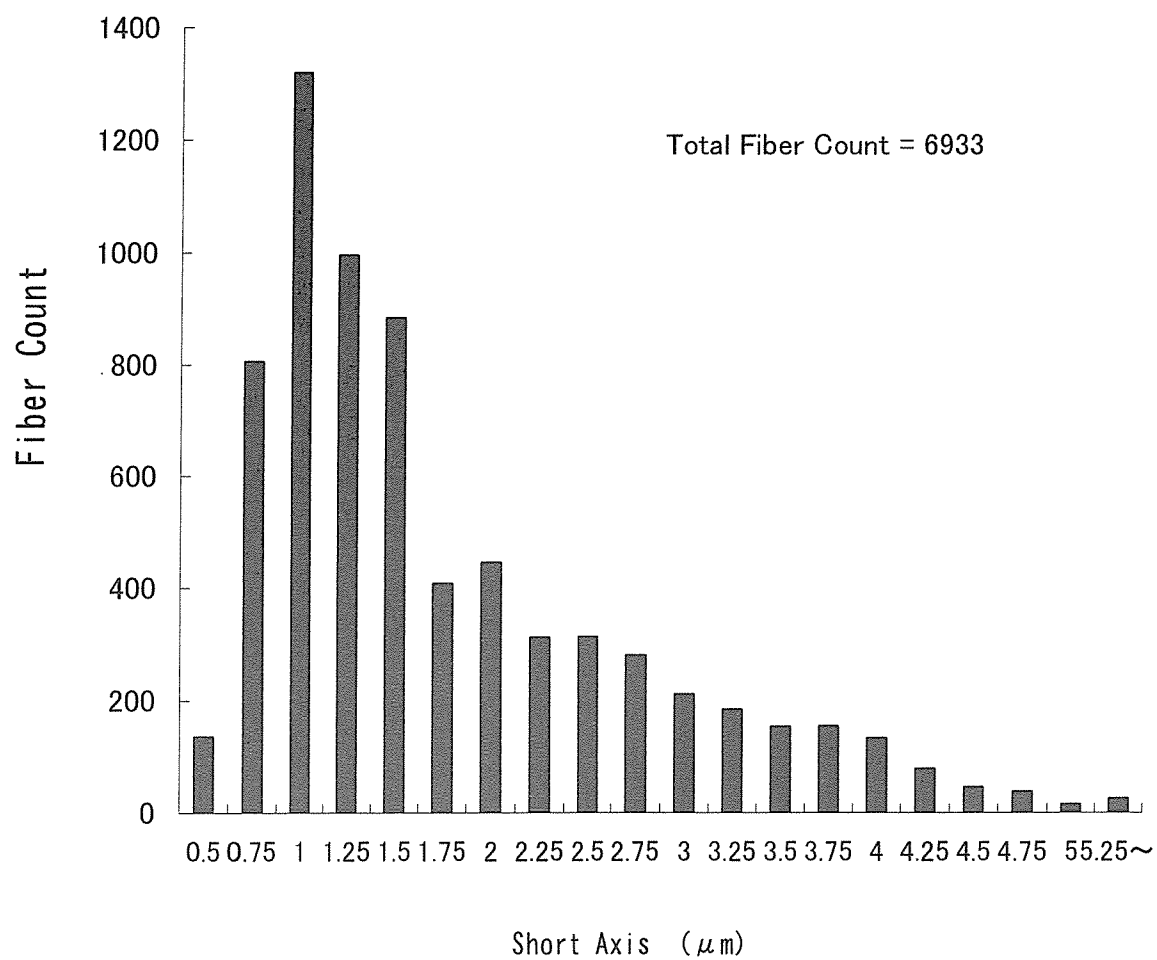


Figure 6. 肺磁界測定法における曝露チャンバー内の発塵繊維の
短径の分布 (NC 社製 RW)

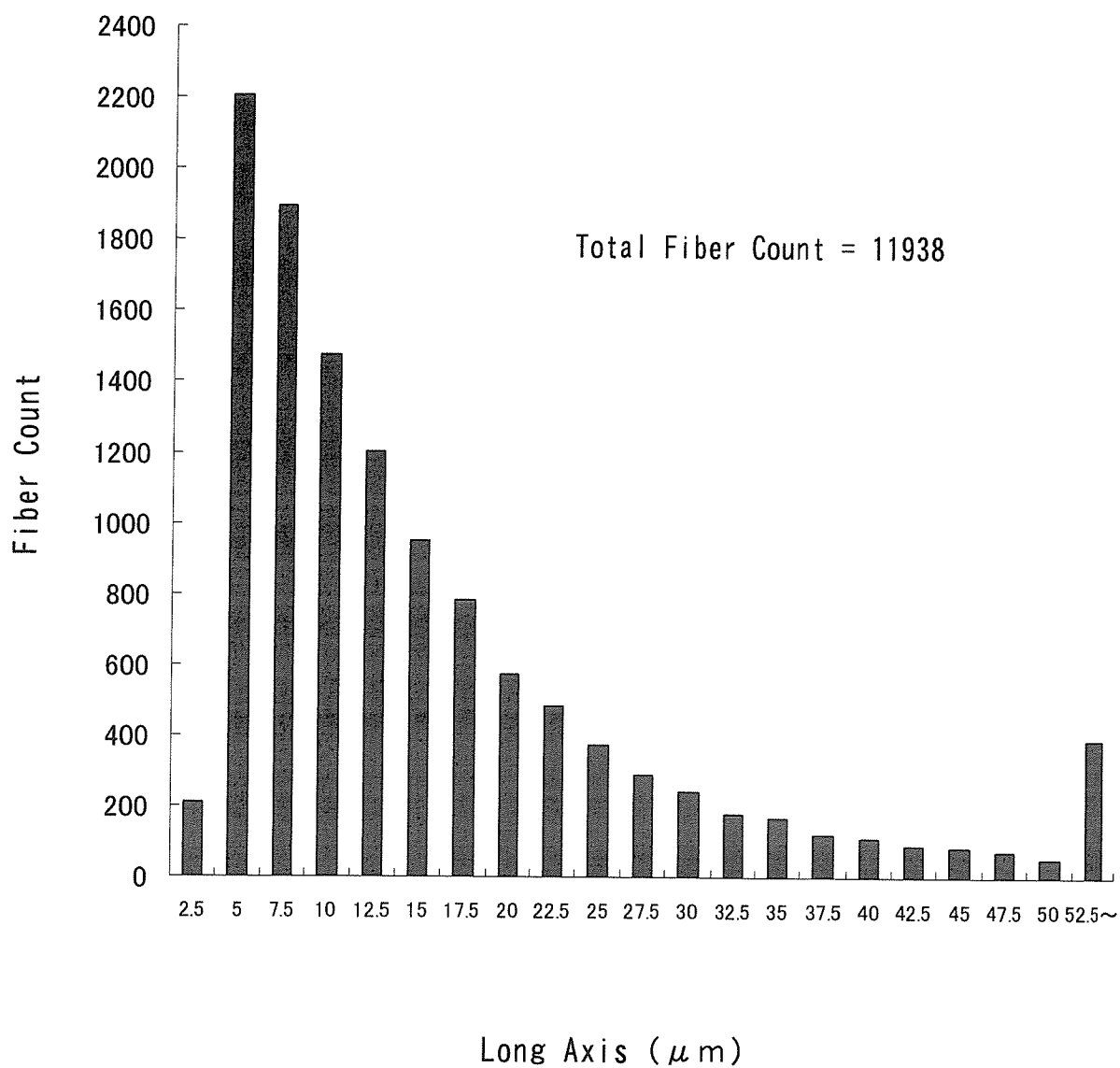


Figure 7. 肺内滞留性実験における曝露チャンバー内の発塵繊維
の長径の分布 (NC 社製 RW)

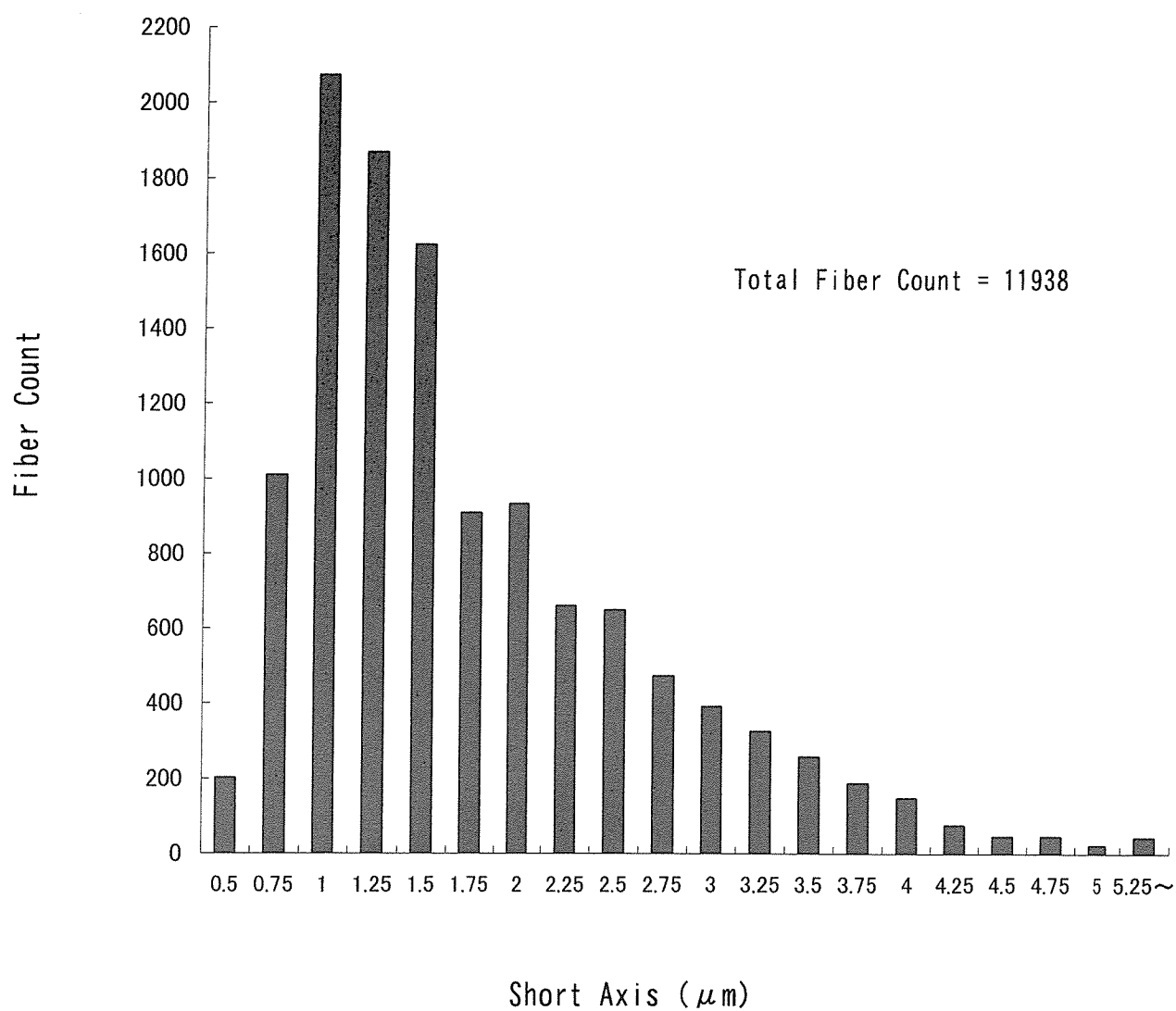


Figure 8. 肺内滞留性実験における曝露チャンバー内の発塵繊維
の短径の分布 (NC 社製 RW)

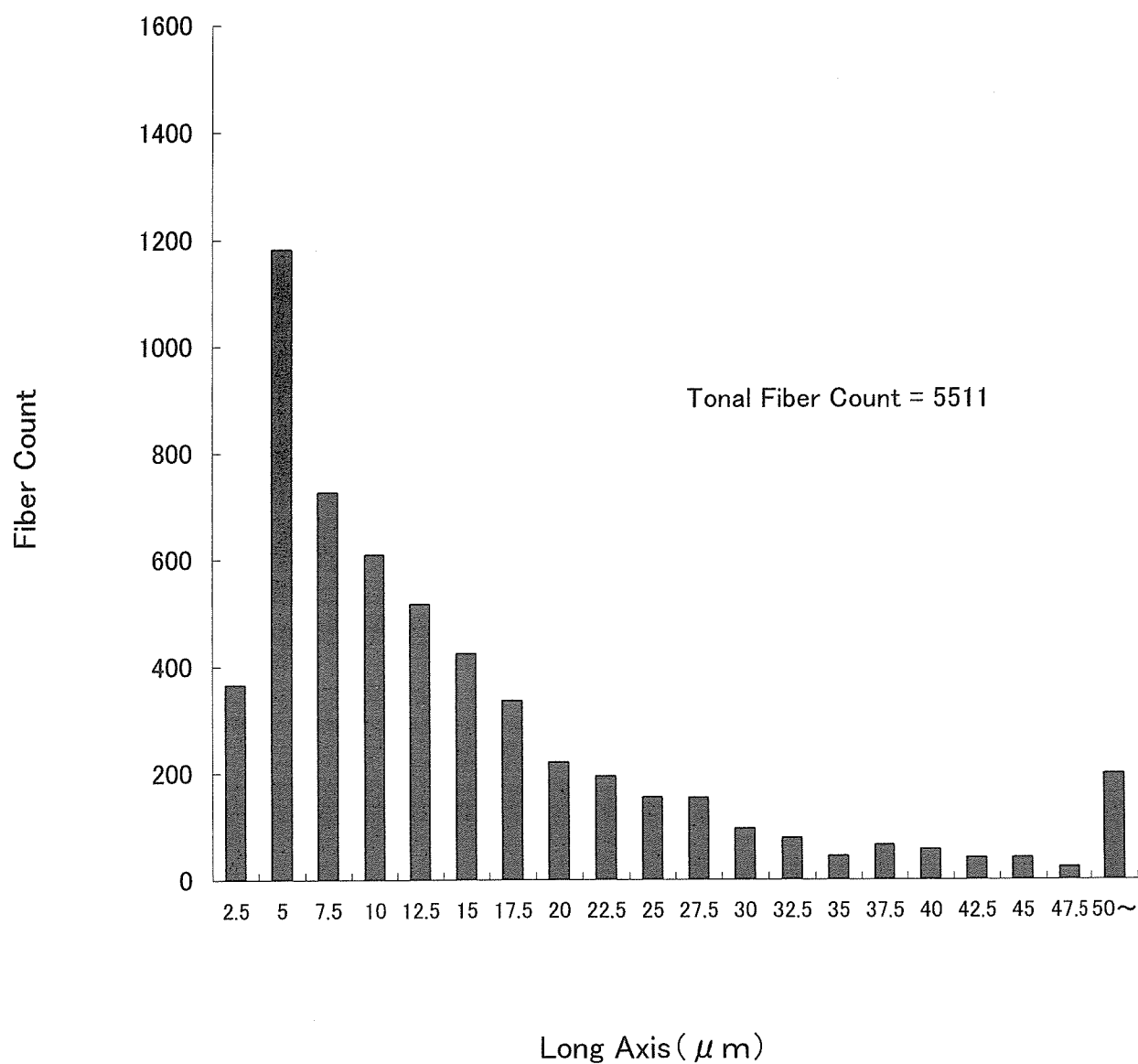


Figure 9. 病理学的評価における曝露チャンバー内の発塵繊維の
長径の分布 (NC 社製 RW)

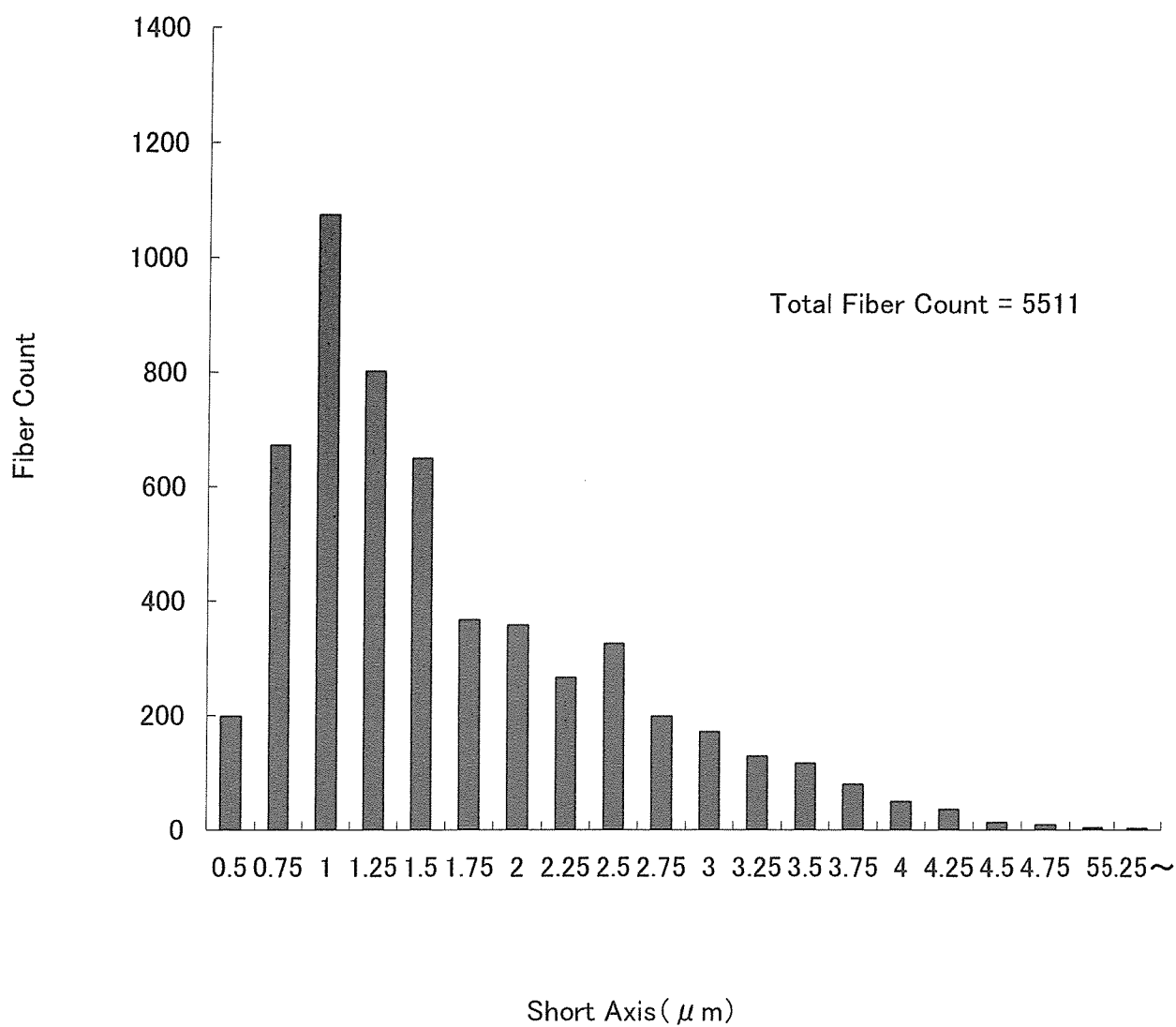


Figure 10. 病理学的評価における曝露チャンバー内の発塵繊維
の短径の分布 (NC 社製 RW)

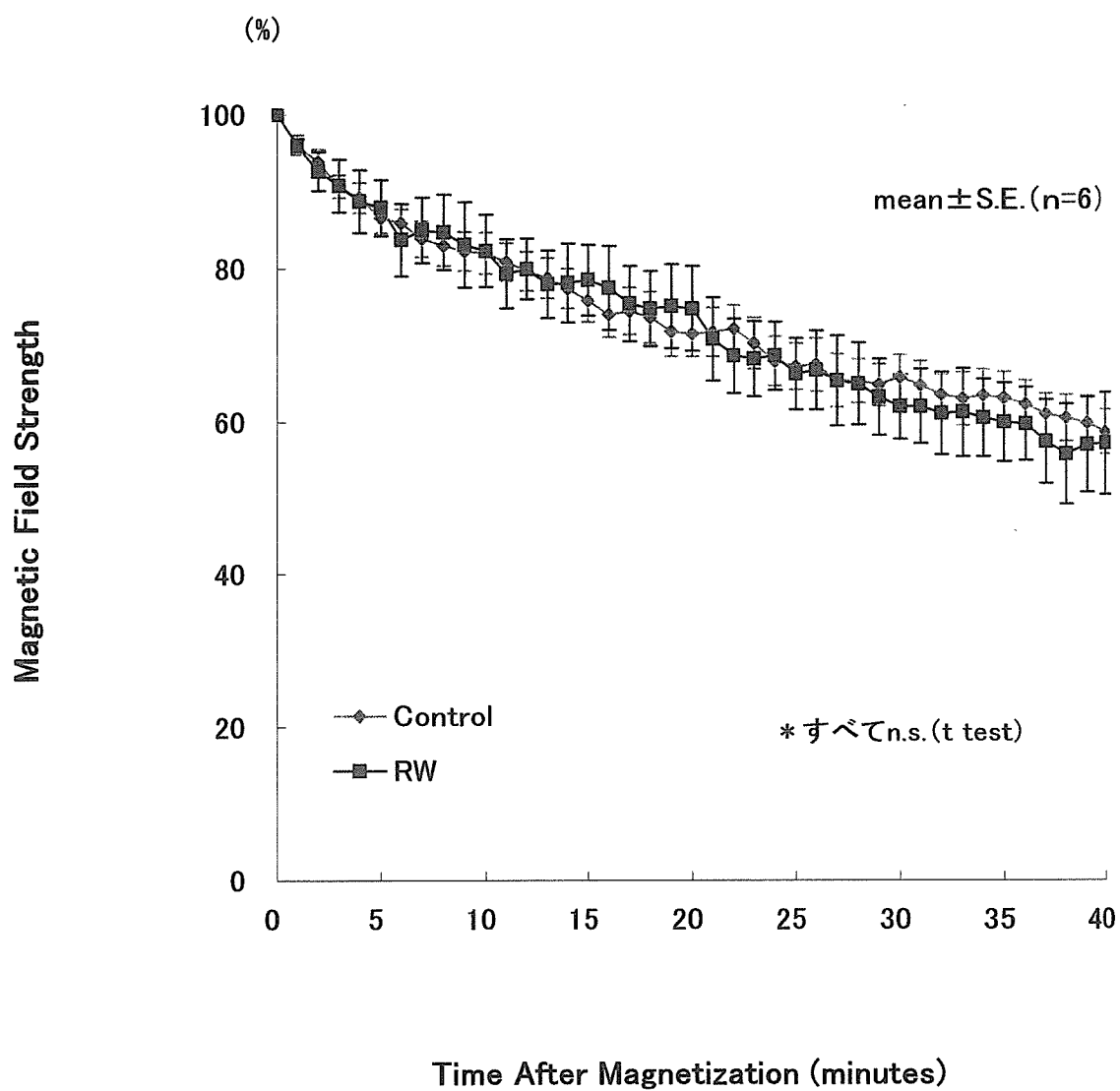


Figure 11. 1日後の緩和曲線 (NC 社製 RW)

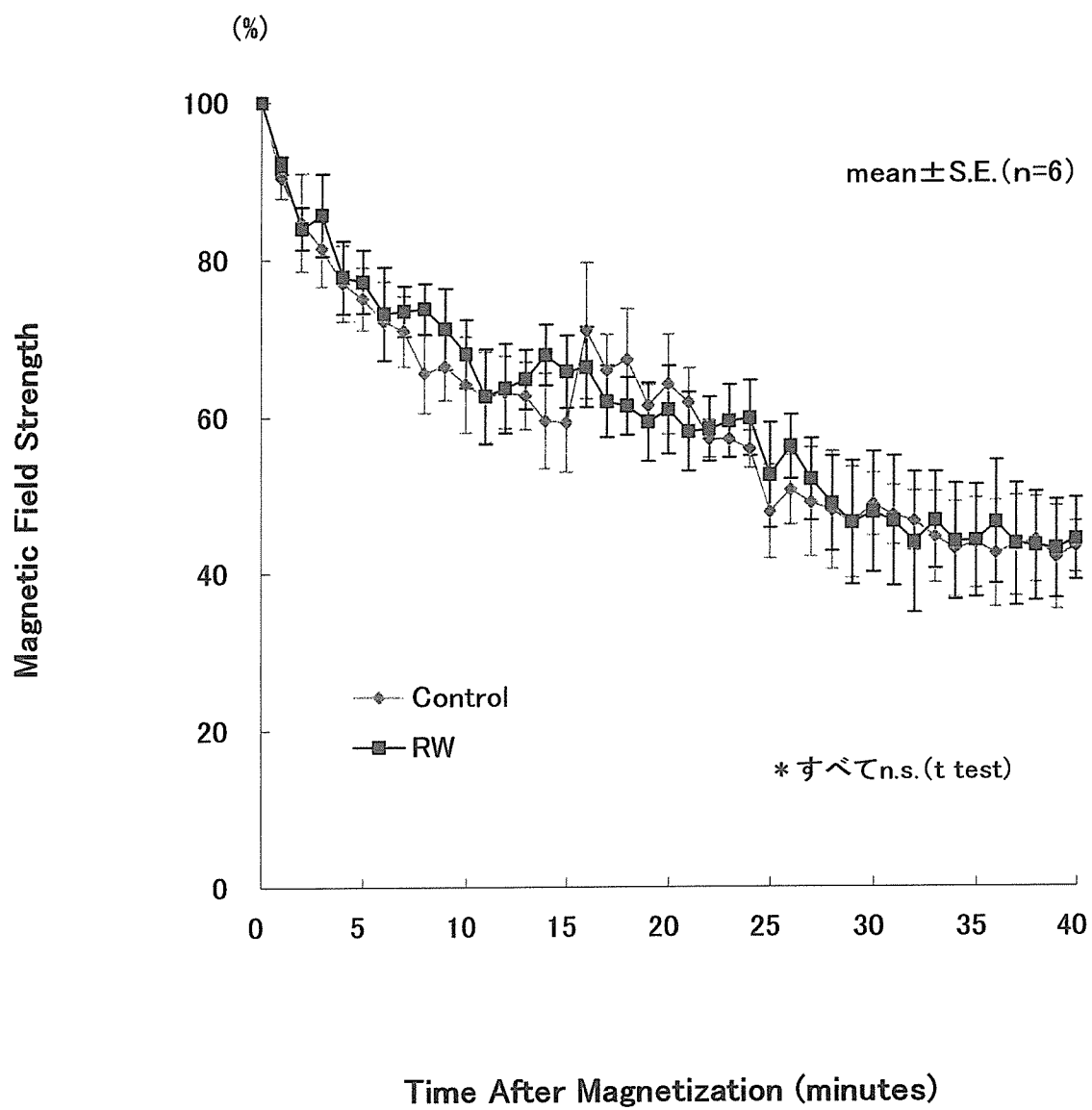


Figure 12. 3日後の緩和曲線 (NC 社製 RW)

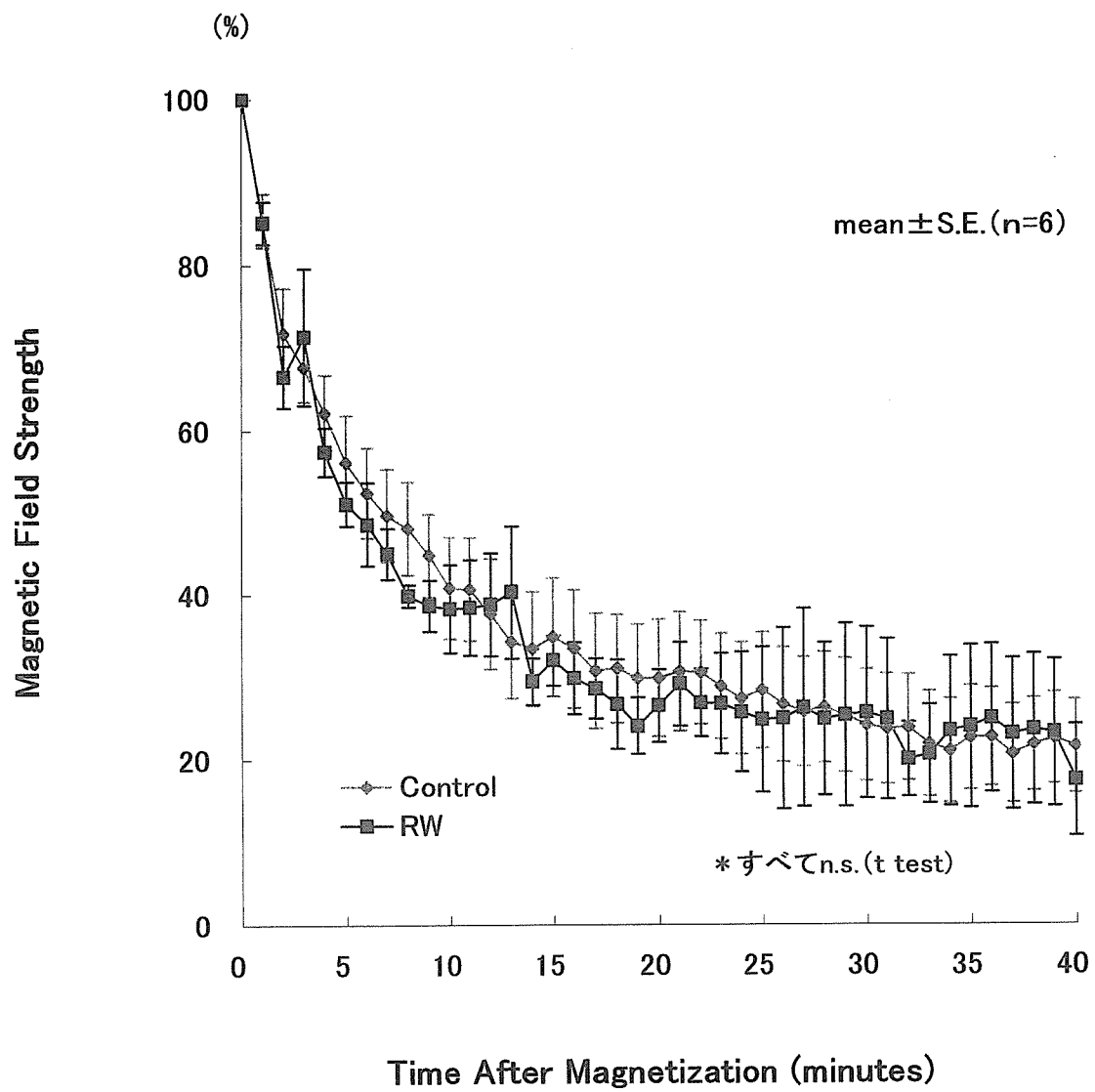


Figure 13. 2 週後の緩和曲線 (NC 社製 RW)

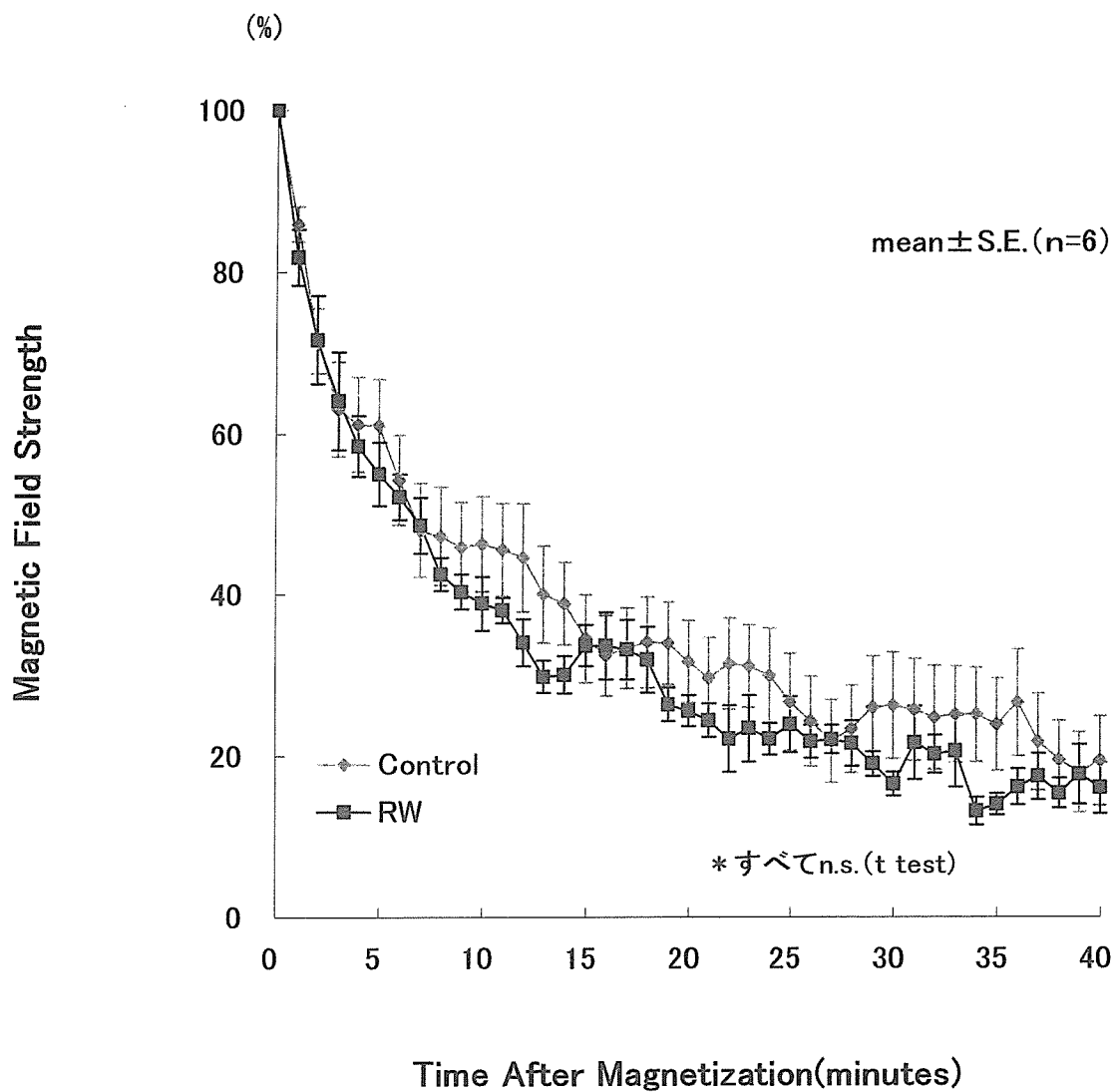


Figure 14. 4 週後の緩和曲線 (NC 社製 RW)

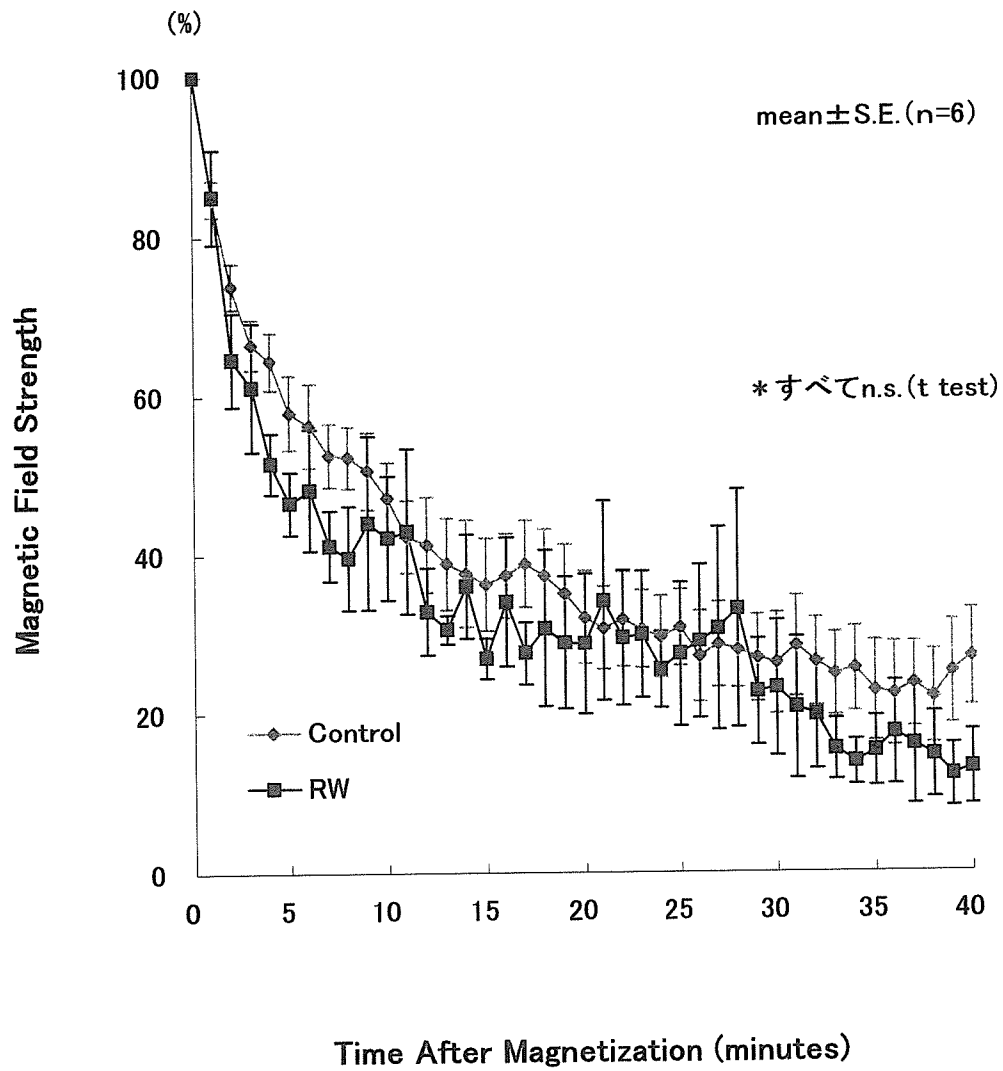


Figure 15. 2ヶ月後の緩和曲線 (NC 社製 RW)

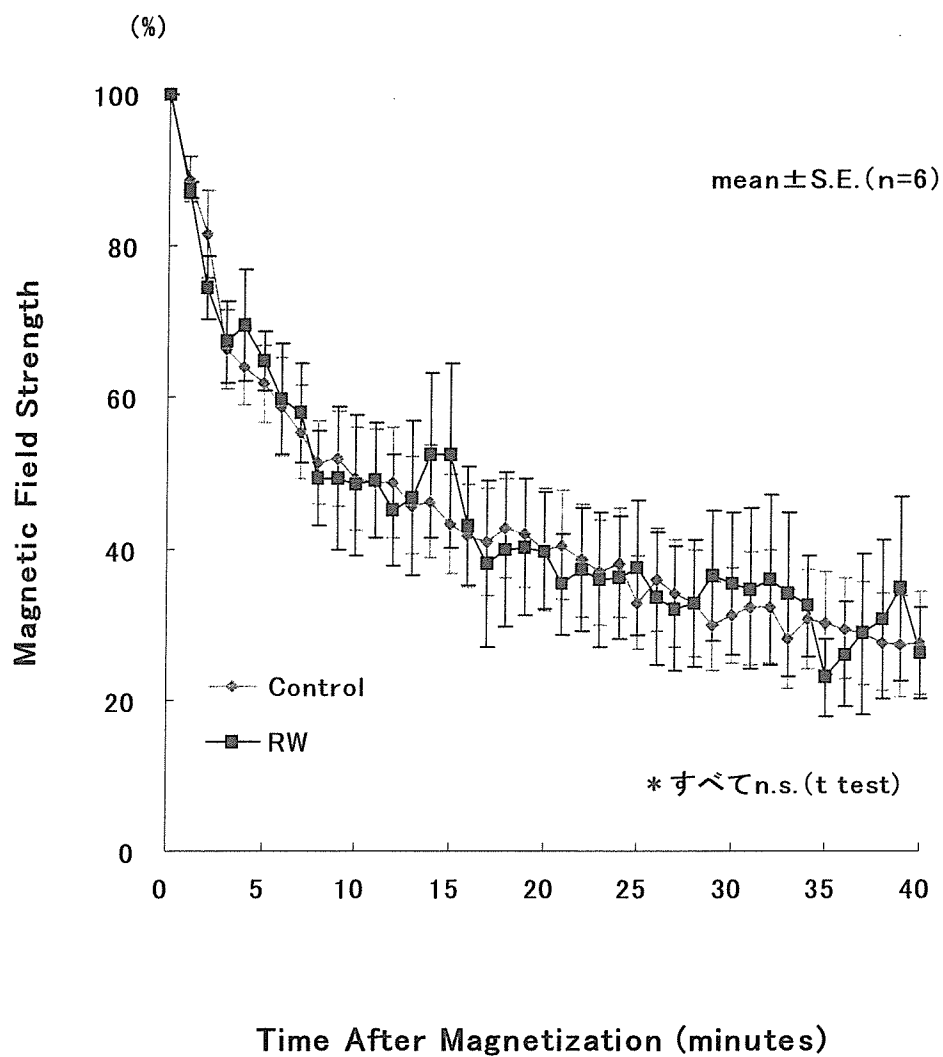


Figure 16. 3ヶ月後の緩和曲線 (NC 社製 RW)