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作用機制	提出假設者	反駁者	反駁之實驗證據
分泌黏液(glue)	N/A	Wagler, 1830; Simmermacher, 1884	壁虎並沒有任何分泌的腺體，不可能分泌黏液
真空吸引(suction, 吸盤)	Simmermacher, 1884	Dellit, 1934	在高真空環境下，壁虎仍具有黏著能力
靜電吸引力(electrostatics attraction)	Schmidt, 1904	Dellit, 1934	壁虎能在充滿電荷的環境中進行黏著，不受環境電荷的影響
摩擦力(friction)	Hora, 1923; Ruibal & Ernst, 1965	為數眾多	當力垂直於黏著的表面，摩擦力並無法發揮作用，但是壁虎卻可以倒掛在天花板行走。
微交錯作用(microinterlocking, 俗稱爪力)	Dellit, 1934	Autumn et al., 2000	在表面極光滑的二氧化矽上，壁虎的黏附力仍不受任何影響
毛細作用(capillary forces)	Hiller, 1968;	Autumn et al., 2002	壁虎的黏附不受吸附表面的化學性質之影響，並且也不受到環境濕度的限制。
	Huber et al., 2005	Arzt, 2006	壁虎的足底有極高疏水性，極高疏水表面之間，毛細作用中關鍵的毛細橋樑無法成形，但是壁虎卻仍可以黏附在極高疏水表面
凡得瓦力(完全因素)	Stork, 1980; Autumn et al., 2000		

Hiller[illegible]1968, 1969,1975[illegible]surface energy[illegible]Hiller[illegible]Autumn & Peattie,2002[illegible]

[illegible]van der Waals interaction[illegible]

□□polarizability□□□□□□□□□□□□□□□Hiller□1968□□□□□□□□□□□□□□□□□□□□□polytetrafluoroethylene,PTFE□□□□□□PTFE □□□□□□□□□□□□□□□□□□□□□□□□PTFE□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□ □□□□□□□□□Autumn & Peattie,2002□□

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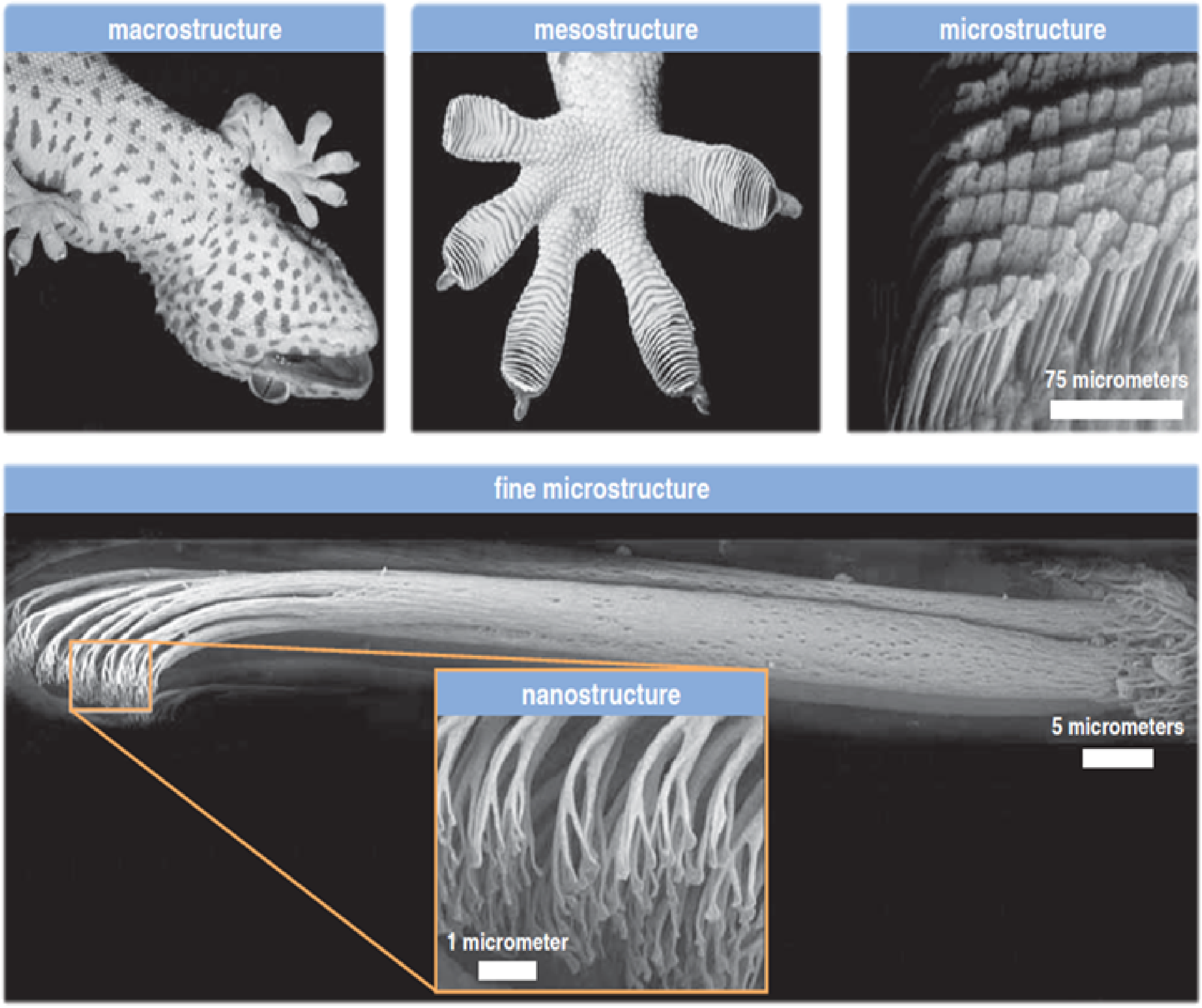
$$F = \frac{HR}{6D^2}$$

□□□ $H = 10^{-19}$ J□ $R = 1$ μm□ $D = 0.2$ nm□□□□□□□□□□□□□400 nN□□□□□□□□□□□□□100□1000□□□□□□□□□□□□□□40-400 μN□□□□□□□□□Autumn□□□□□□□□□□Micro Electro Mechanical Systems□MEMS□□□□□□□□□□□□□□□□□□200μN□□□□□□□2002□□Autumn□□□Autumn et al., 2002□□□—□□□□□



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$$F = \frac{3}{2}\gamma\pi R$$

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[illegible]JKR[illegible]Arzt et al., 2003[illegible]

[illegible]F[illegible]R[illegible]n[illegible] $1/n$ [illegible]r[illegible] $R/\sqrt{n}$ [illegible]JKR[illegible] $F \propto R$ [illegible]JKR[illegible]F[illegible]f[illegible] F' [illegible]([illegible])[illegible]

$$\left.\begin{aligned} F &= \frac{3}{2}\gamma\pi R \\ f &= \frac{3}{2}\gamma\pi r \\ r &= \frac{R}{\sqrt{n}} \end{aligned}\right\} \rightarrow F' = nf = \frac{3}{2}\gamma\pi n r = \sqrt{n}\left(\frac{3}{2}\gamma\pi R\right) = \sqrt{n}F = (\frac{R}{r})F$$

[illegible]n[illegible] $\sqrt{n}$ [illegible] $F' \propto \sqrt{n} = R/r$) [illegible]$n$[illegible] $\sqrt{n} = R/r \rightarrow 10^9$) [illegible]JKR[illegible] $f \propto r$ [illegible]n [illegible] $\sqrt{n}$ [illegible] $F' \propto \sqrt{n}$ [illegible]

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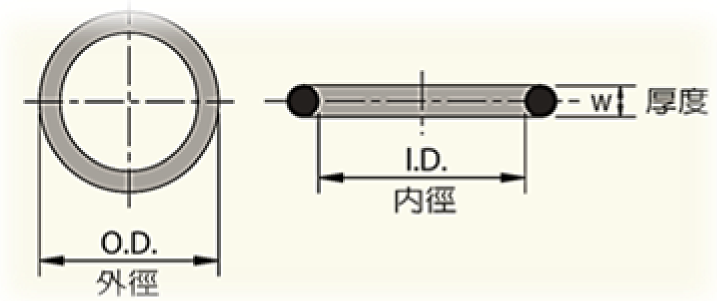

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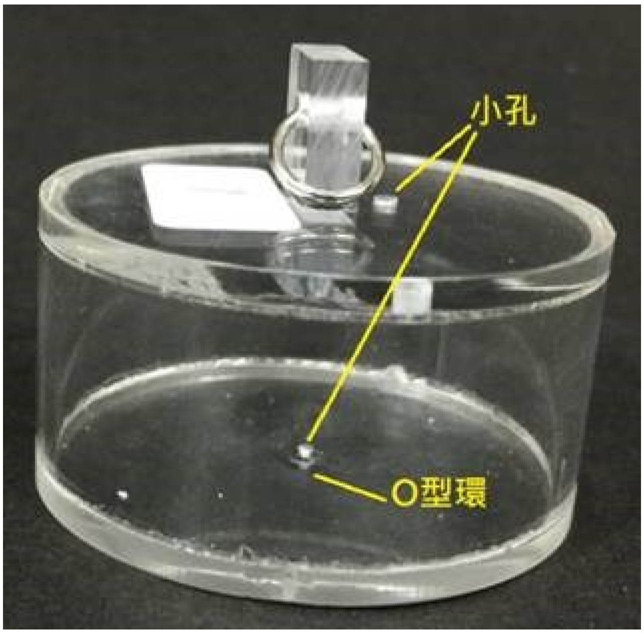

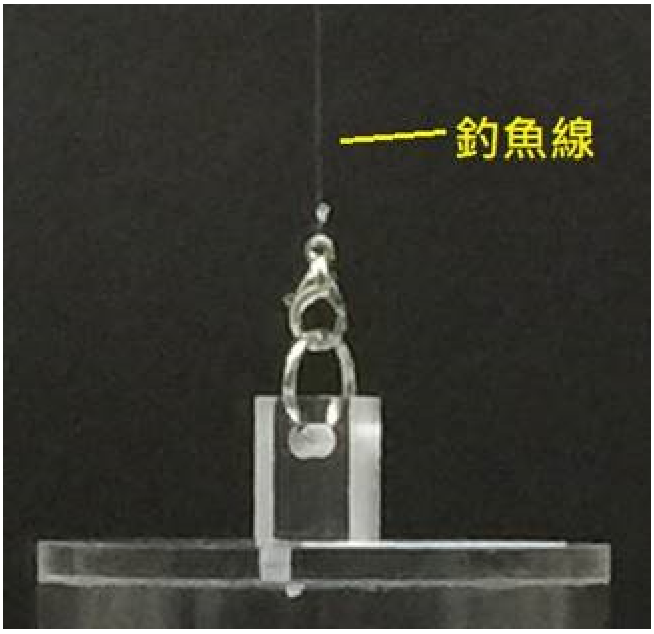

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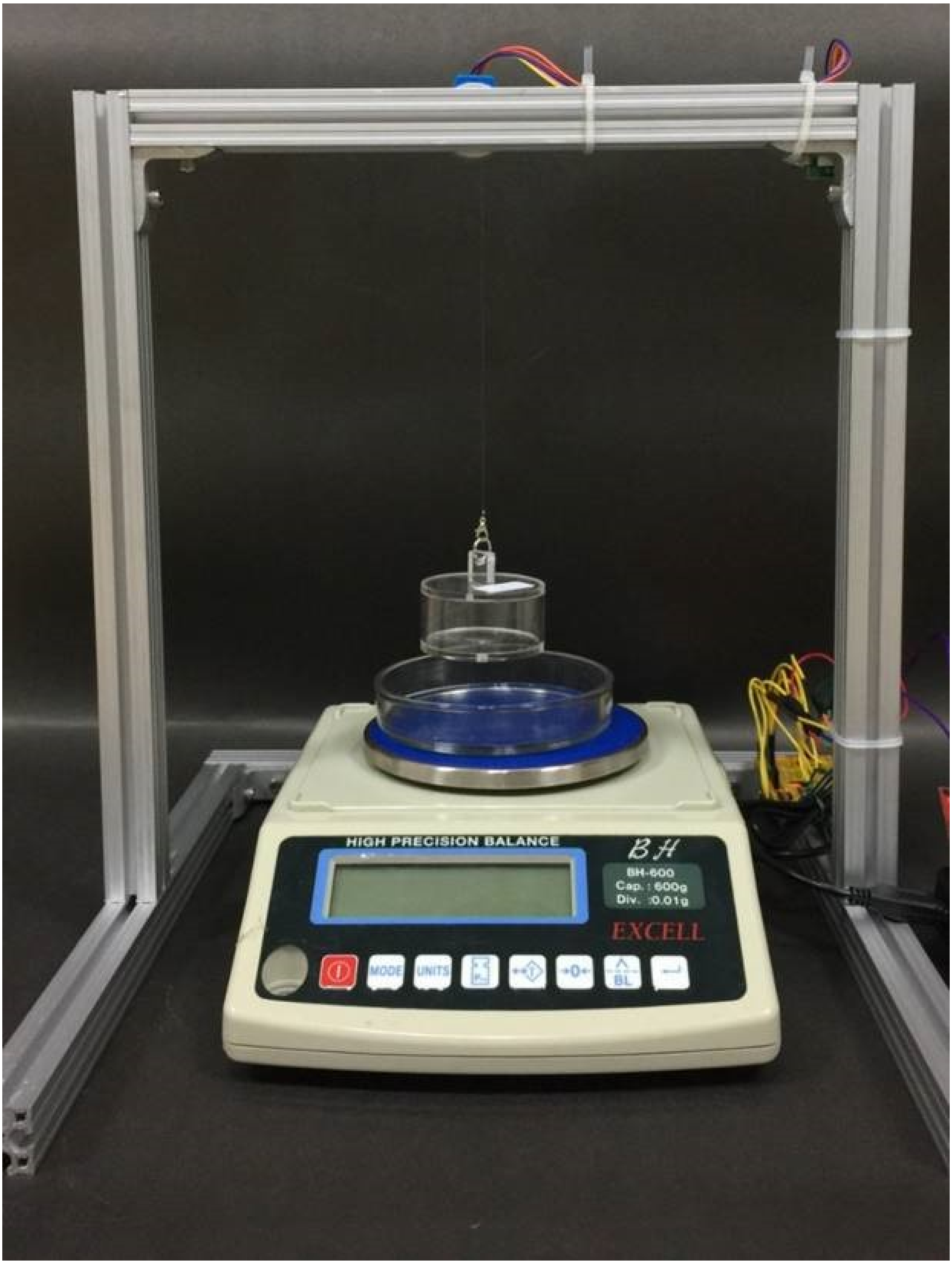

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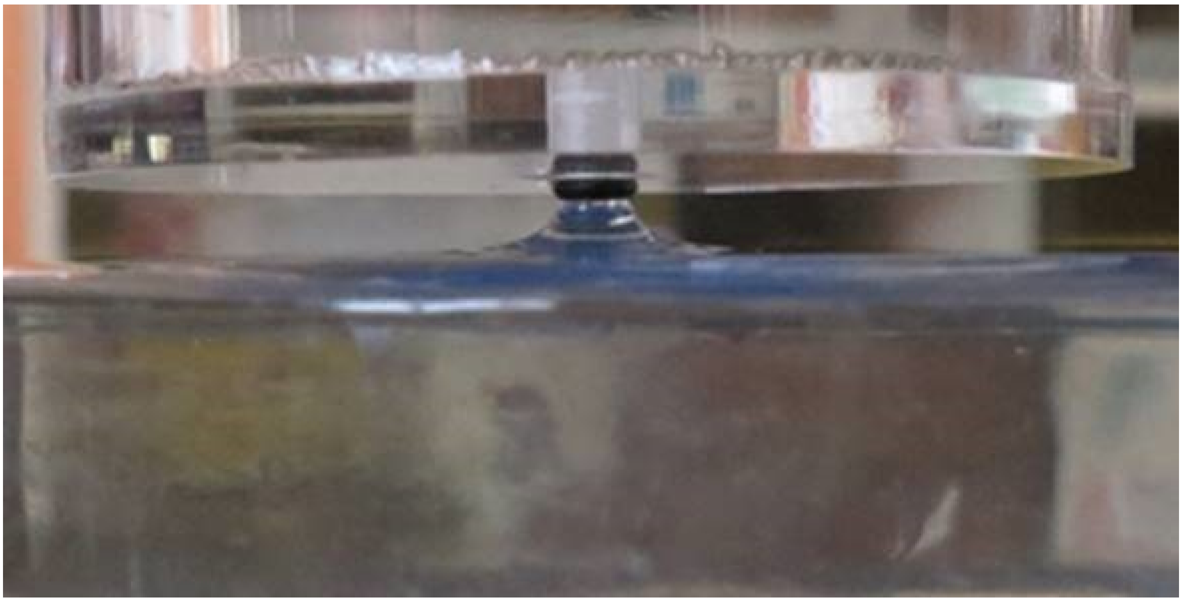

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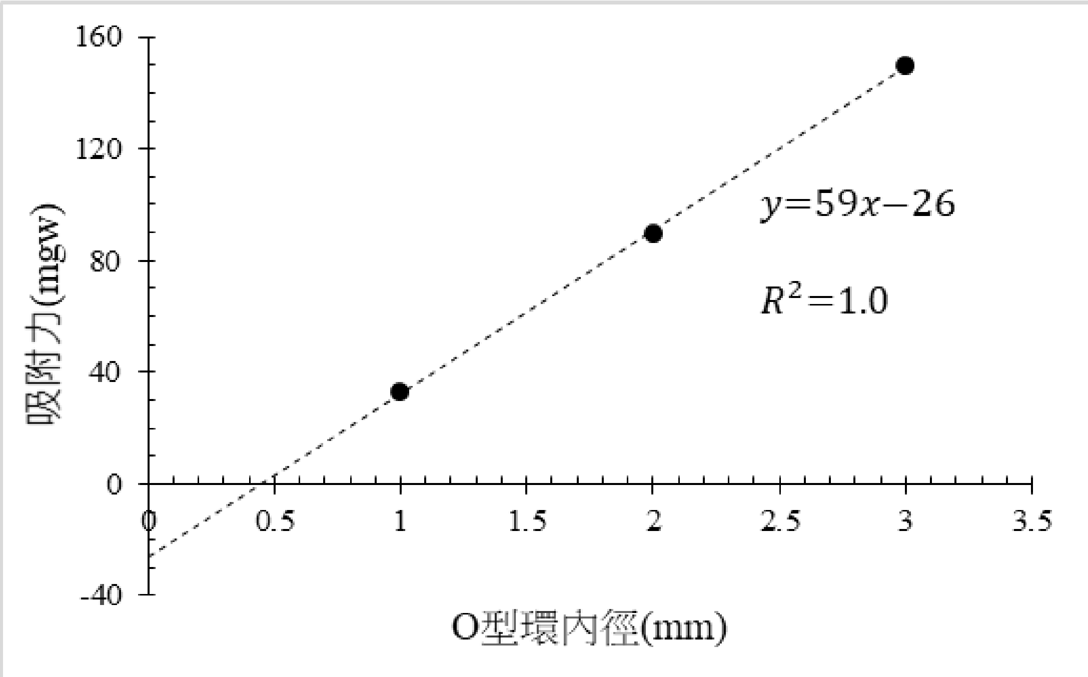

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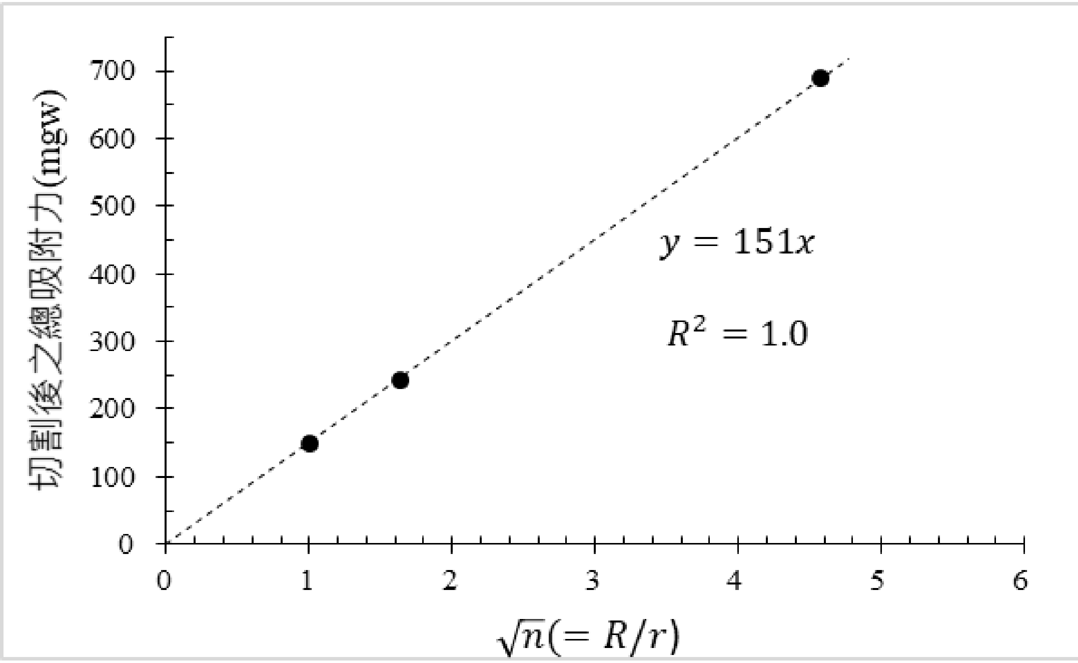

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