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Nascent titanium-/silicon-containing particle formation in corona-discharge-assisted combustion

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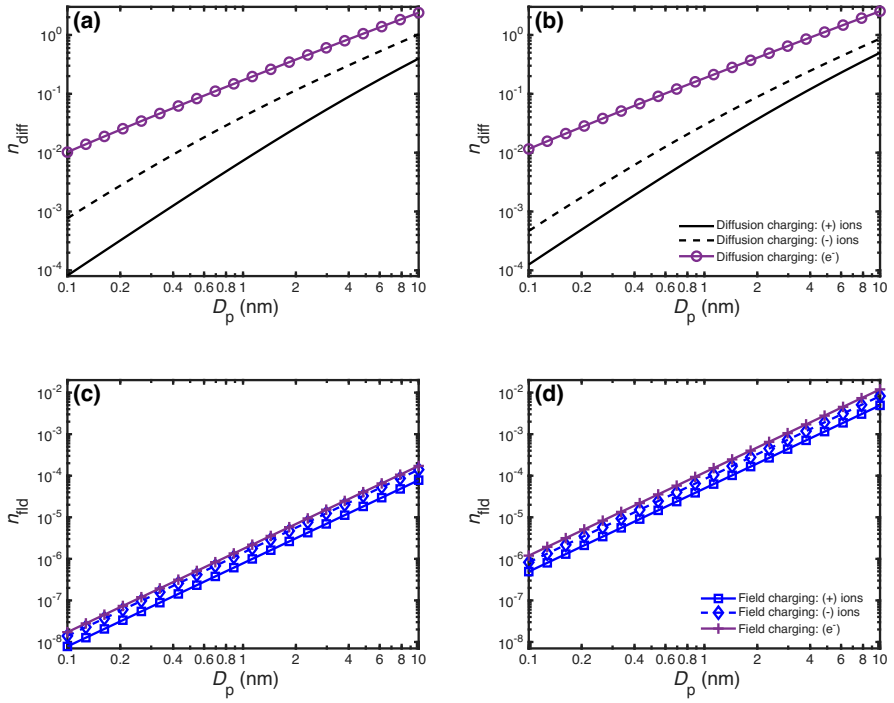

Figure S1: Shows the charge acquired by SiO_2 particles with a dielectric constant of 3.9; (a) Diffusion charging in flame only condition; (b) Diffusion charging in PAC with a plasma power of 125 W; (c) Field charging in flame only condition; (d) Field charging in PAC with a plasma power of 125 W.

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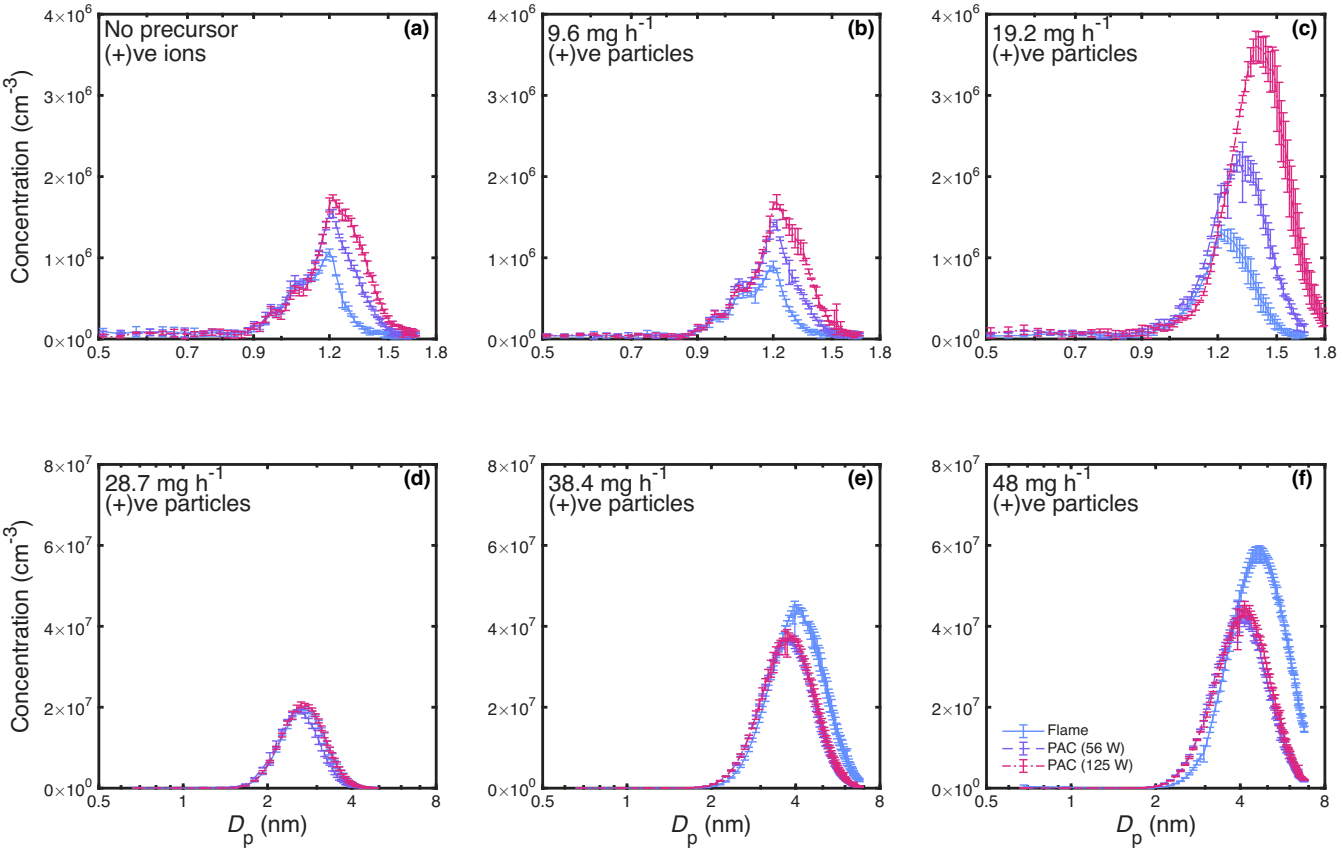

Figure S2: (a) The size distribution of positive ions without any TTIP; (b), (c), (d), (e), and (f) are the size distribution of positively charged Ti-containing clusters with TTIP feed rates ranging from of 9.6 mg h^{-1} to 48 mg h^{-1}. Each panel compares the influence of corona discharge at power 56 W and 125 W on the size distribution. Error bars denote the standard deviation. Size distributions showed in this plot are not corrected for charged fraction.

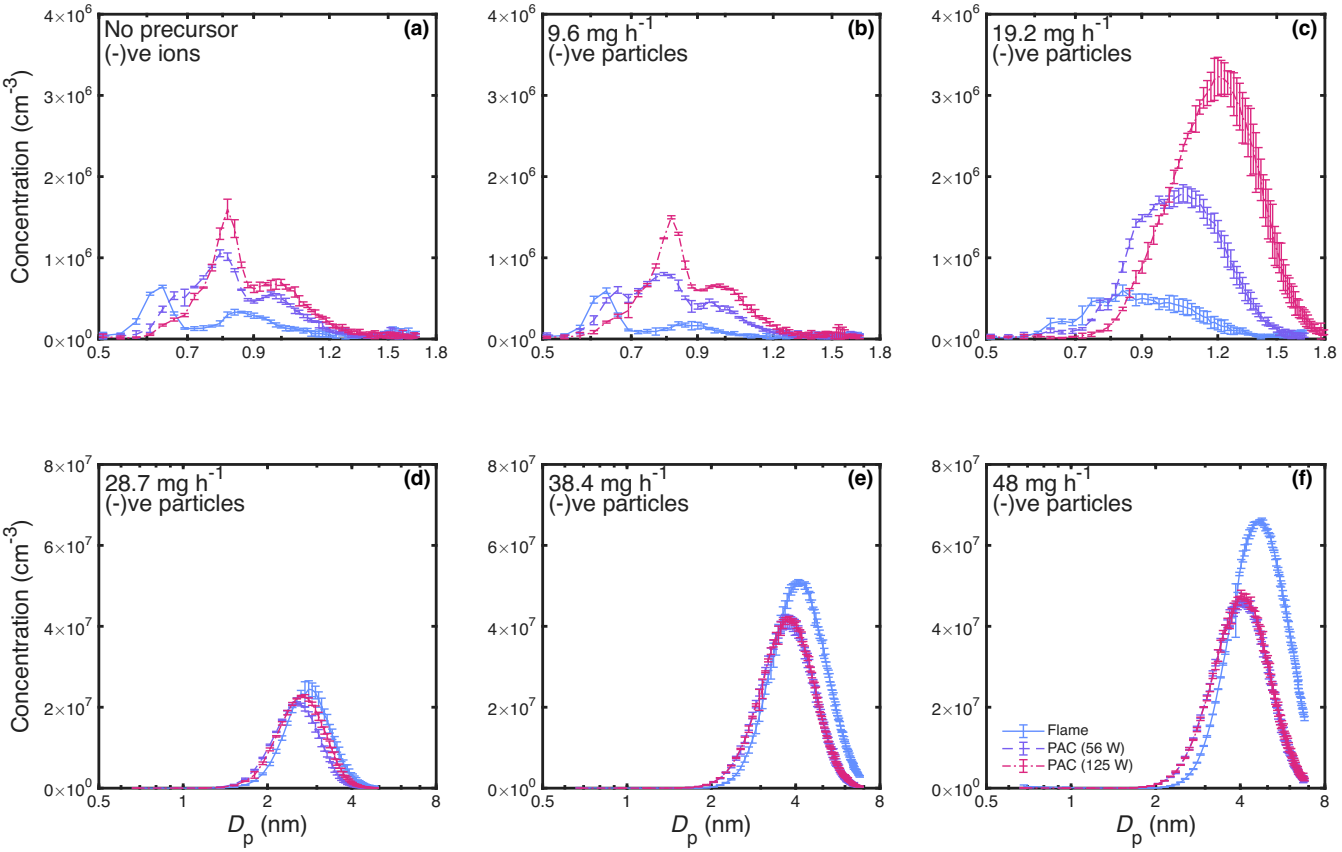

Figure S3: (a) The size distribution of negative ions without any TTIP; (b), (c), (d), (e), and (f) are the size distribution of negatively charged Ti-containing clusters with TTIP feed rates ranging from of 9.6 mg h^{-1} to 48 mg h^{-1}. Each panel compares the influence of corona discharge at power 56 W and 125 W on the size distribution. Error bars denote the standard deviation. Size distributions showed in this plot are not corrected for charged fraction.

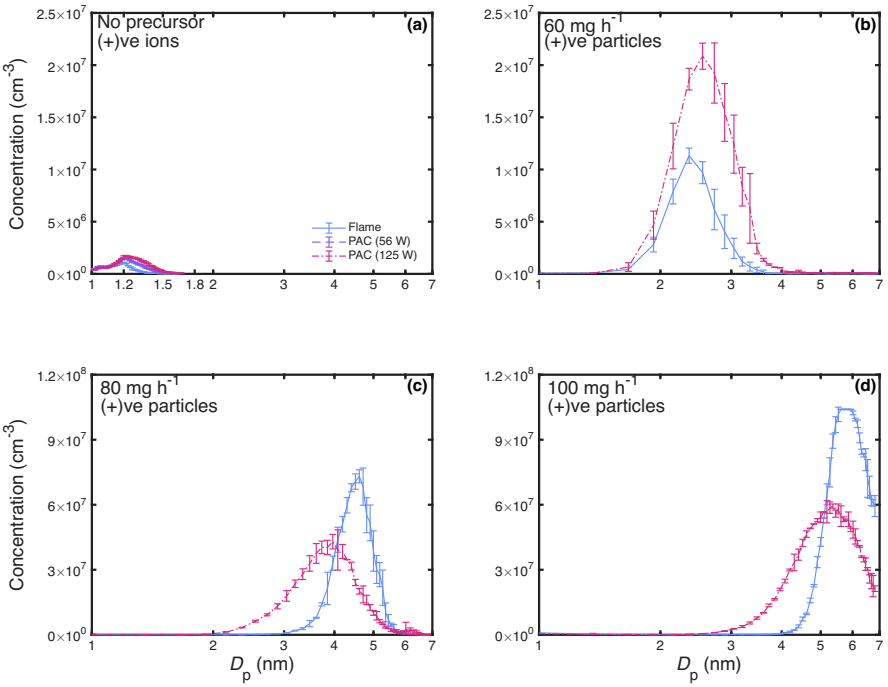

Figure S4: (a) shows the size distribution of positive ions without precursor, TEOS, addition. (b), (c), and (d) show the size distribution of positively charged Si-containing clusters. The size distributions are shown for TEOS feed rates ranging from of 60 mg h^{-1} to 100 mg h^{-1}. Each panel compares the influence of corona discharge at power 125 W on the size distribution. Error bars denote the standard deviation. Size distributions showed in this plot are not corrected for charged fraction.

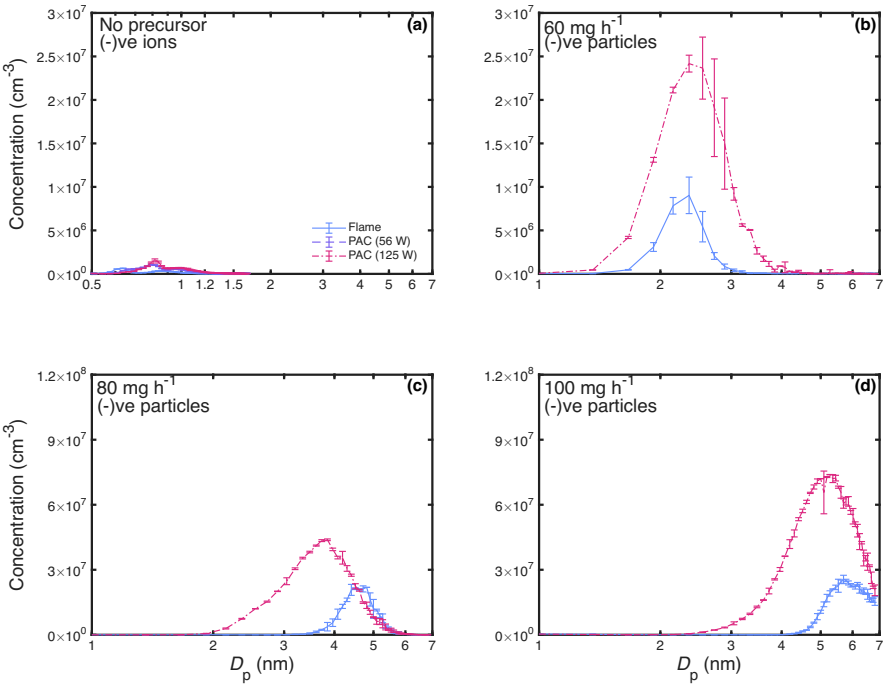

Figure S5: (a) shows the size distribution of negative ions without precursor, TEOS, addition. Compared to other panels, panel (a) has different x-axis limit. (b), (c), and (d) show the size distribution of negatively charged Si-containing clusters. The size distributions are shown for TEOS feed rates ranging from of 60 mg h^{-1} to 100 mg h^{-1}. Each panel compares the influence of corona discharge at power 125 W on the size distribution. Error bars denote the standard deviation. Size distributions showed in this plot are not corrected for charged fraction.