Produção do O_2^+ a partir do CO_2 por impacto de elétrons

Ana Beatriz Monteiro-Carvalho[1], Lucas Sigaud[1] e Eduardo Montenegro[2]

[1]UFF– Universidade Federal Fluminense
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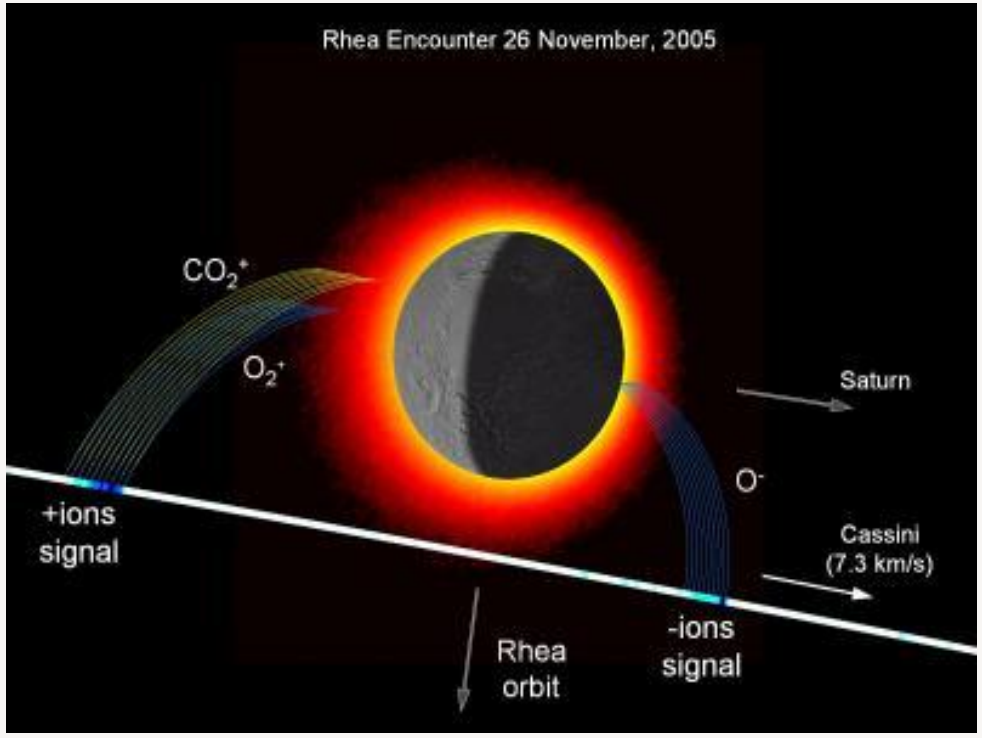

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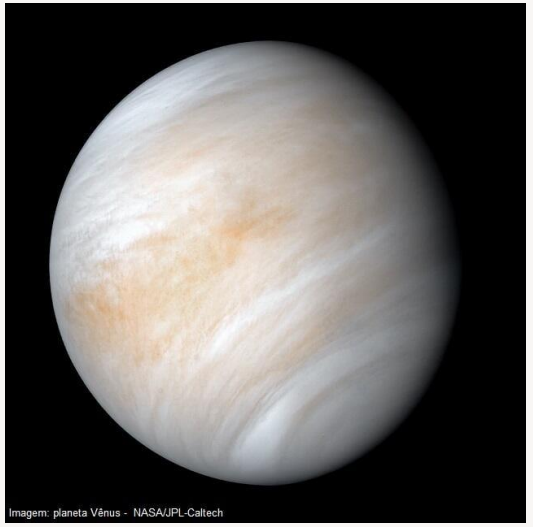

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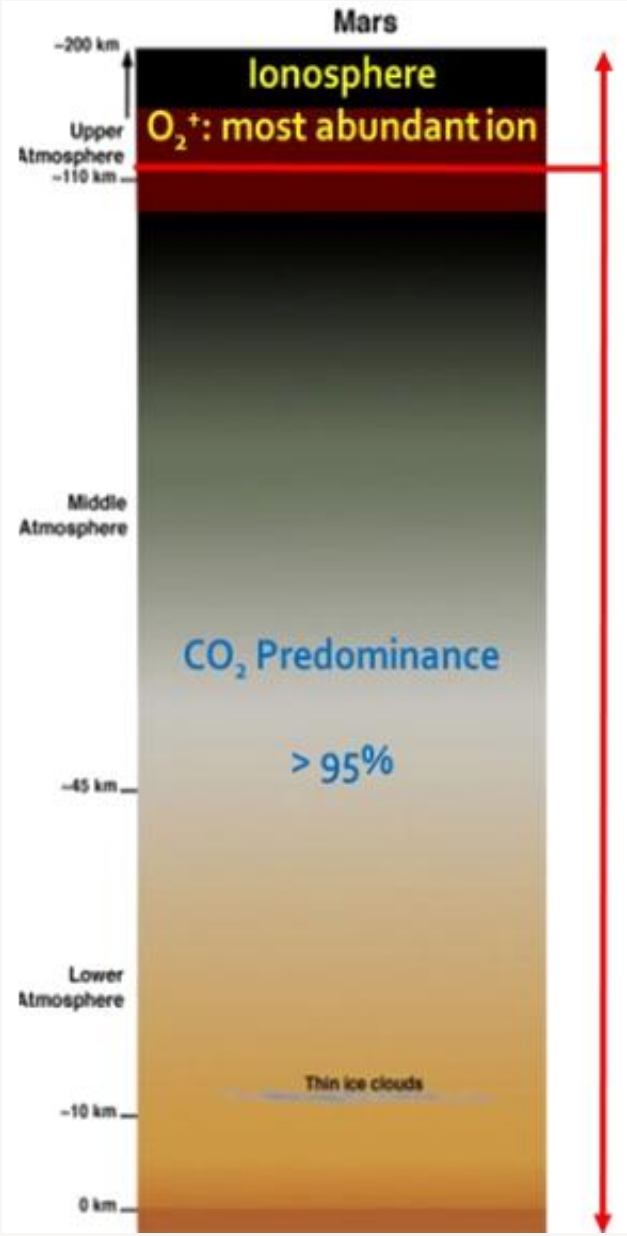

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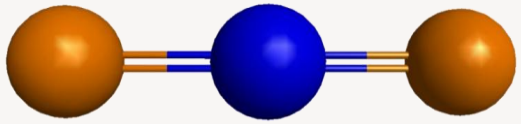
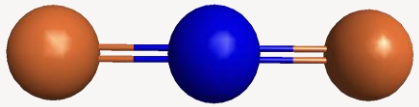
- **Dinâmica Molecular**

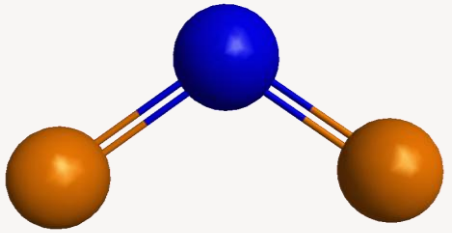


Modos Vibracionais

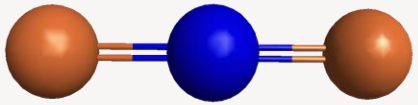
Estiramento Simétrico



Flexão

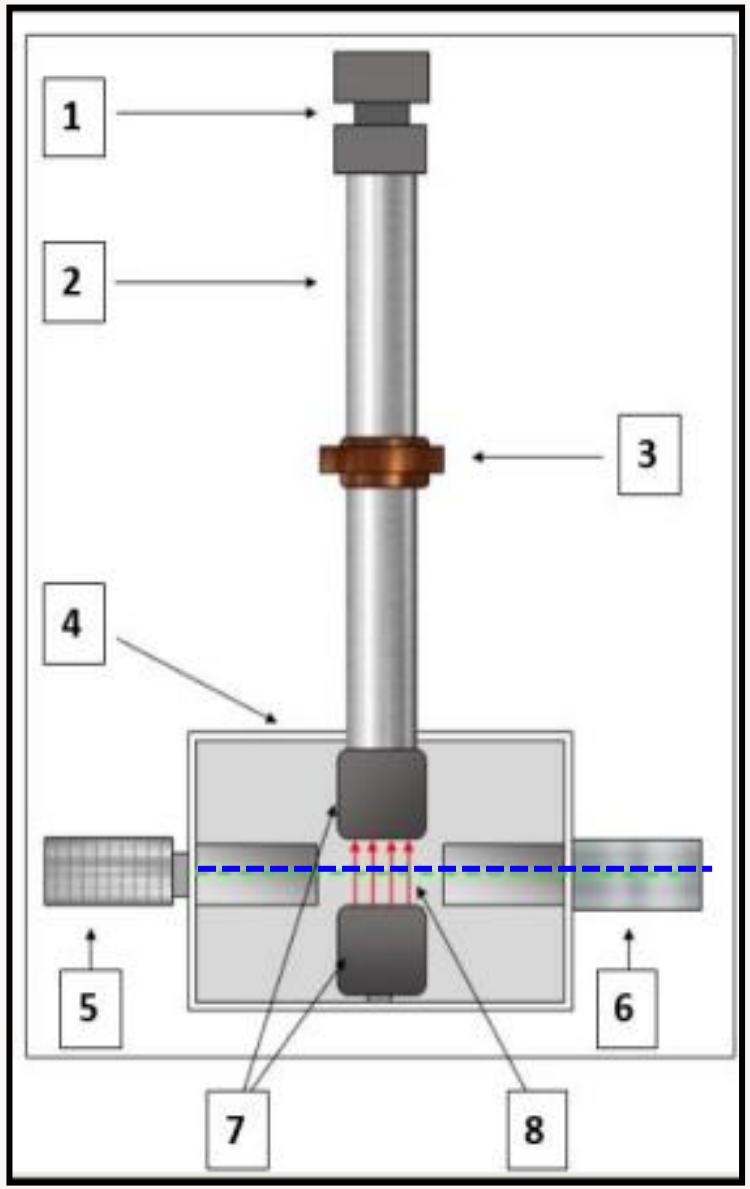


Estiramento Assimétrico

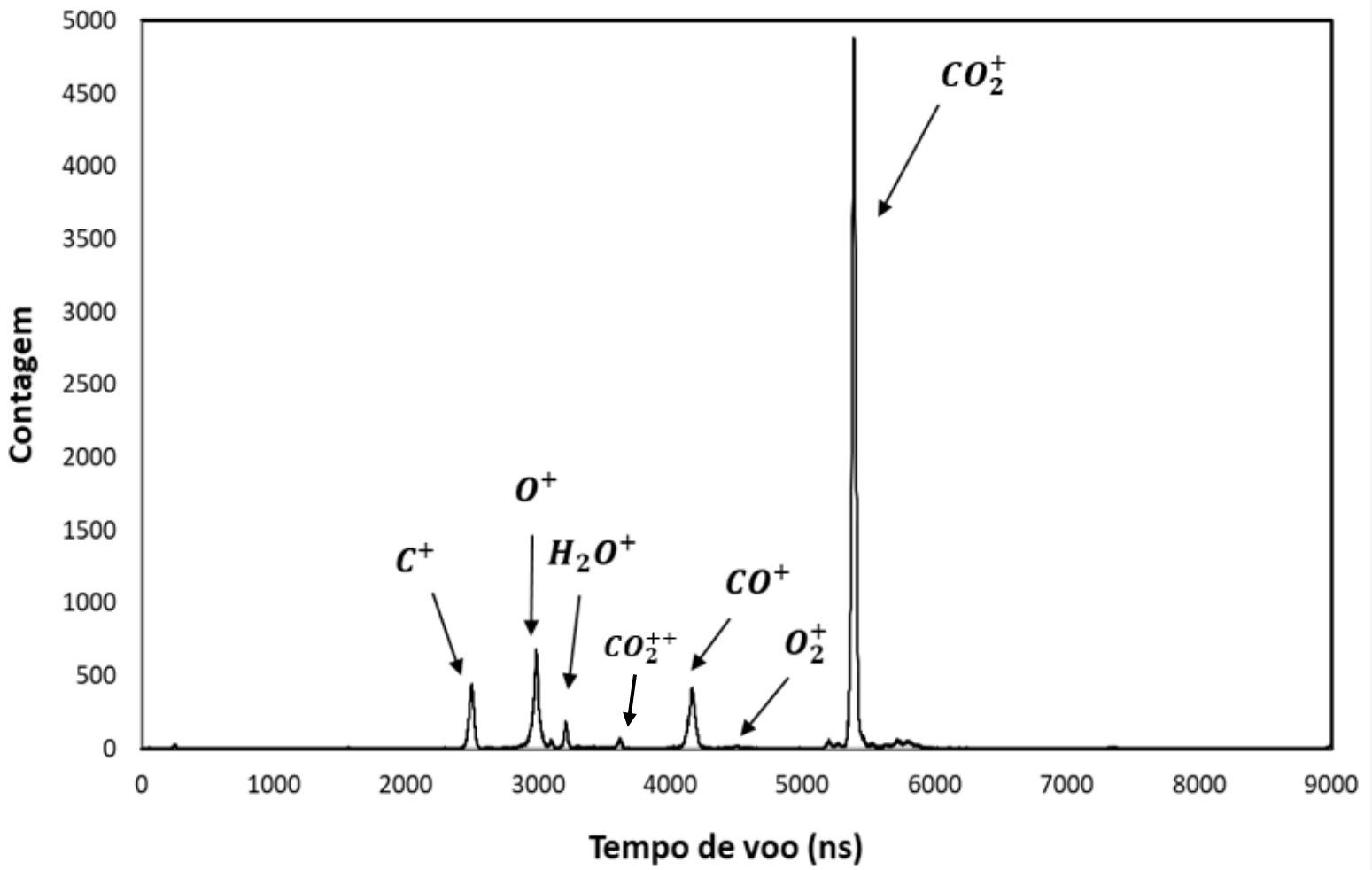


Aparato Experimental

(1) Detector;
(2) Tubo de voo (TOF);
(3) Lente tipo Einzel;
(4) Célula Gasosa;
(5) Canhão de Elétrons;
(6) Copo de Faraday;
(7) Cartolas de Extração;
(8) Região de Interação.



Espectro do CO_2



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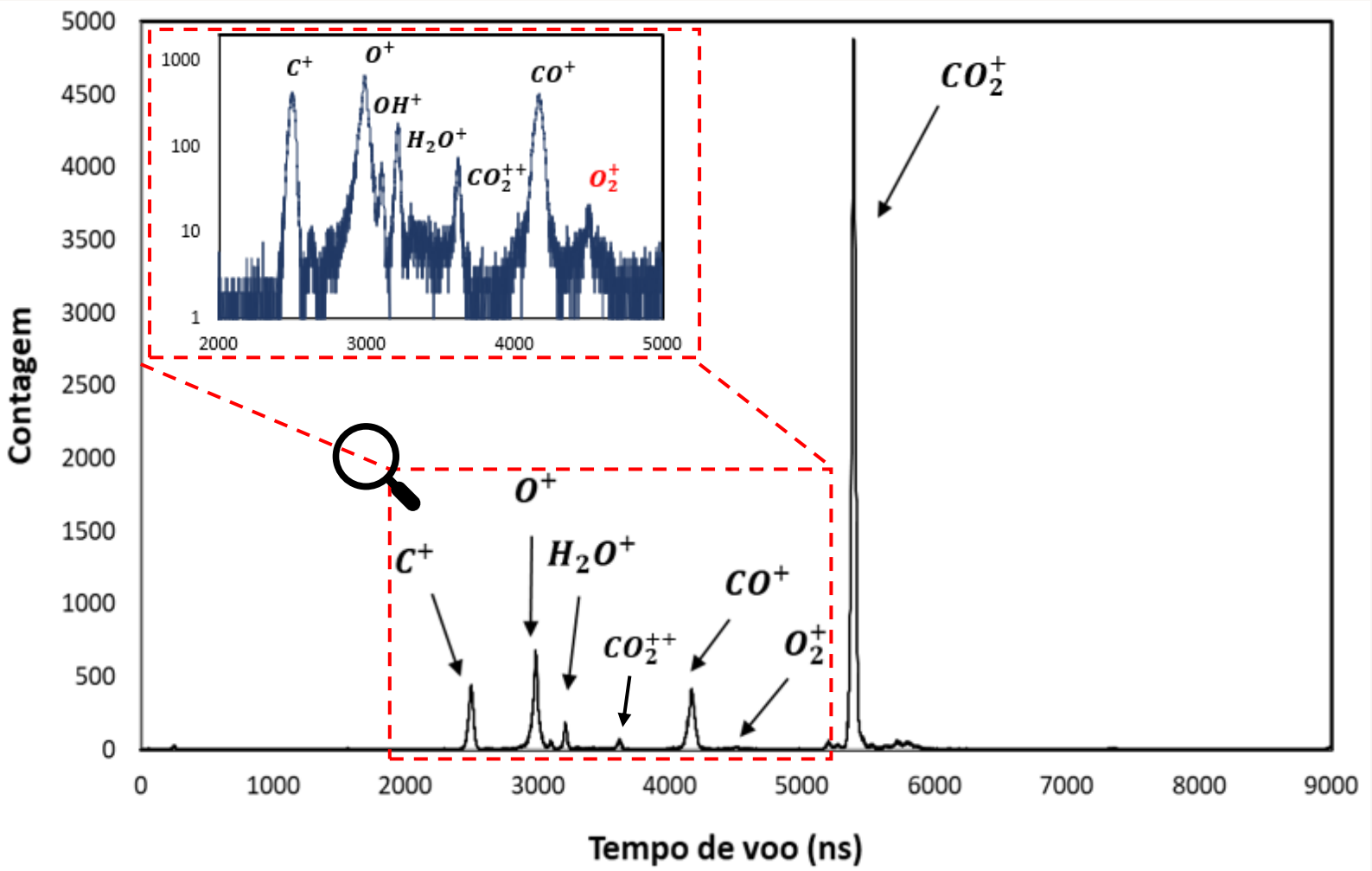

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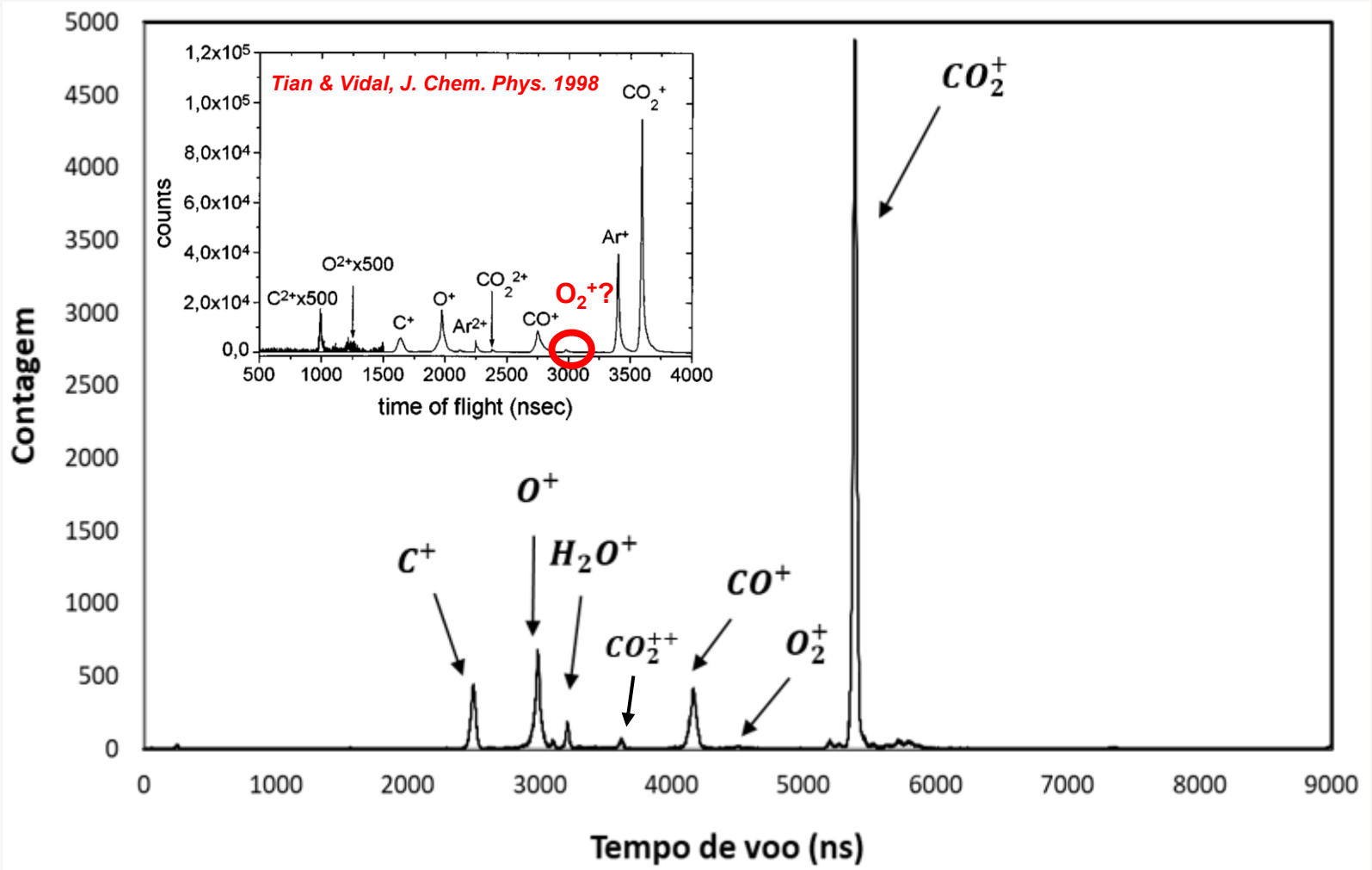

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(Hitchcock, Brion and van der Wiel, *Chemical Physics* **45**, 461 (1980))

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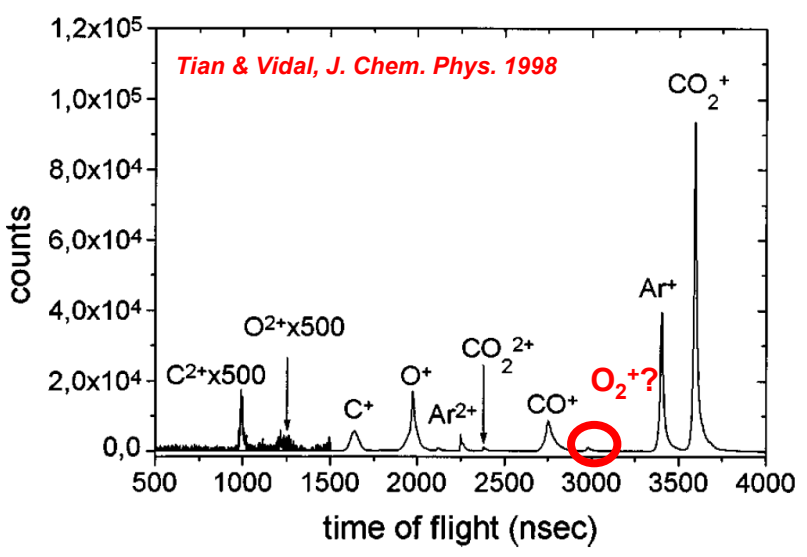
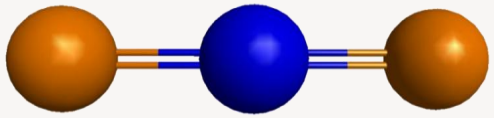
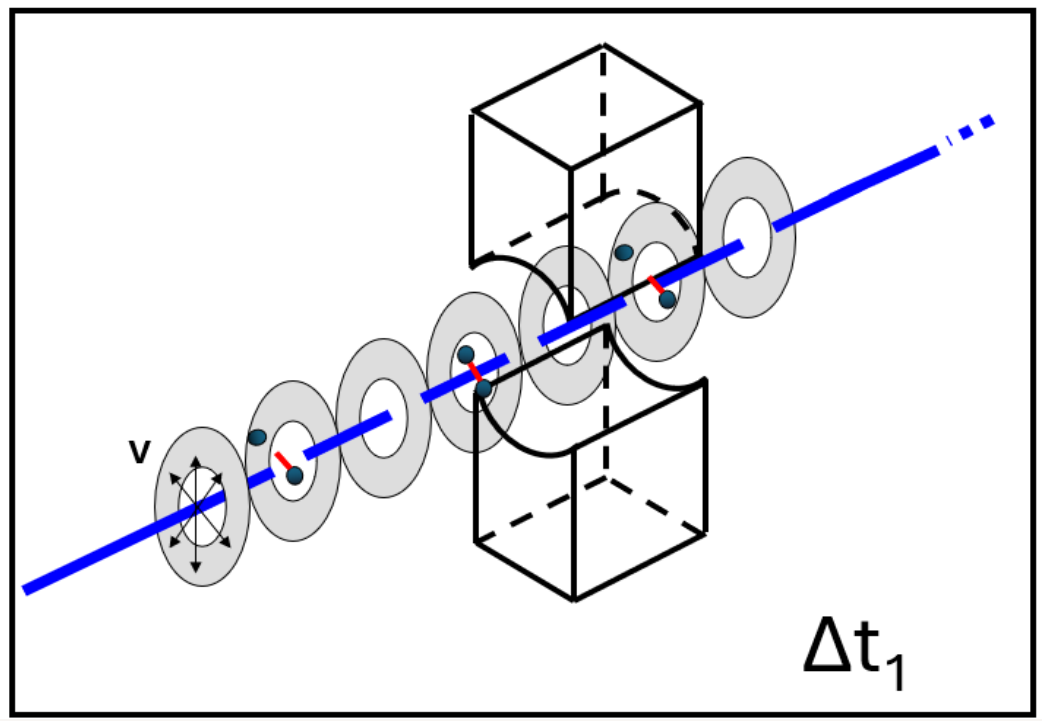




1st evidence: Z. Lu et al., Science 346, 61 (2014)

Técnica DETOF

***D**elayed **E**xtraction **T**ime-**O**f-**F**light*



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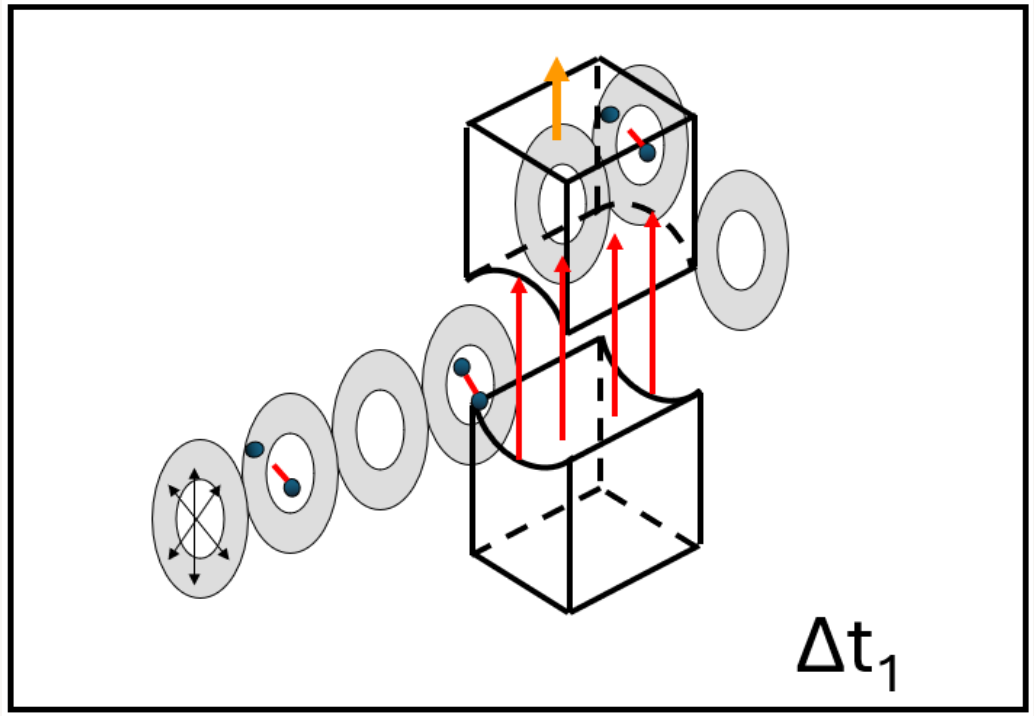

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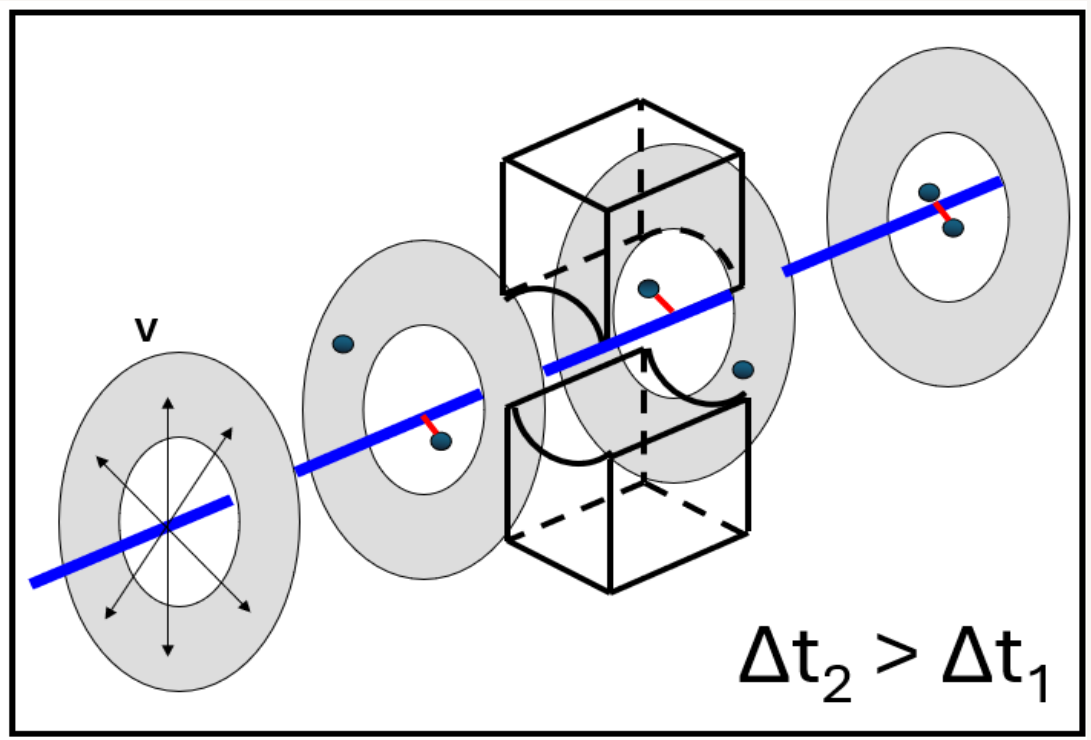

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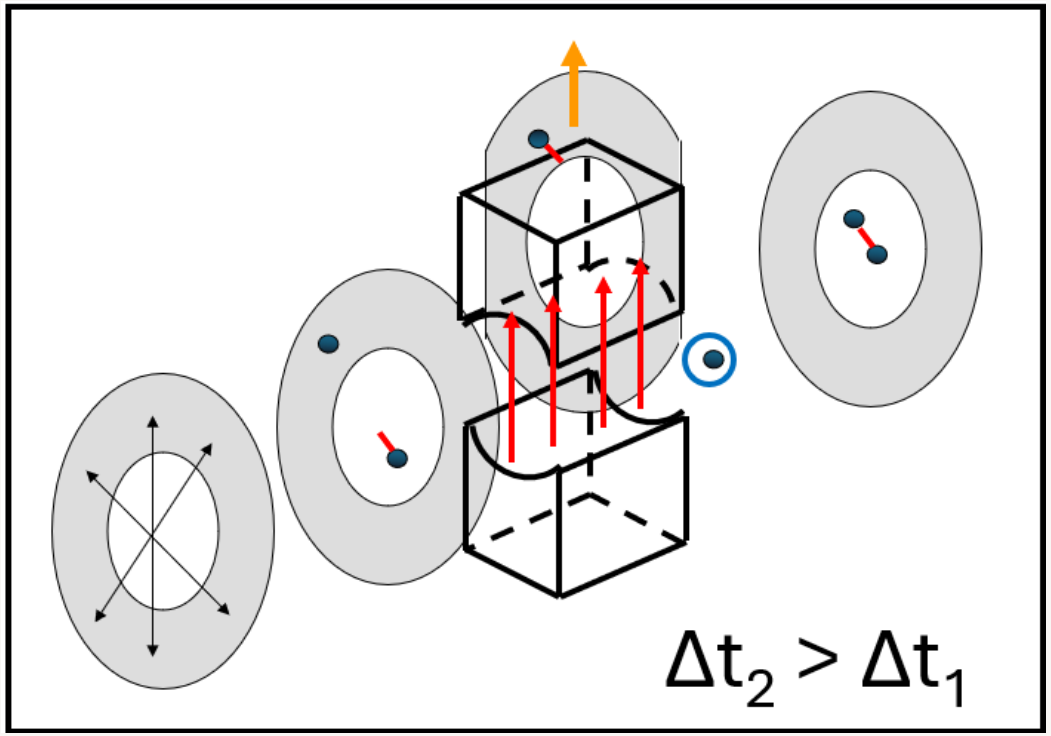

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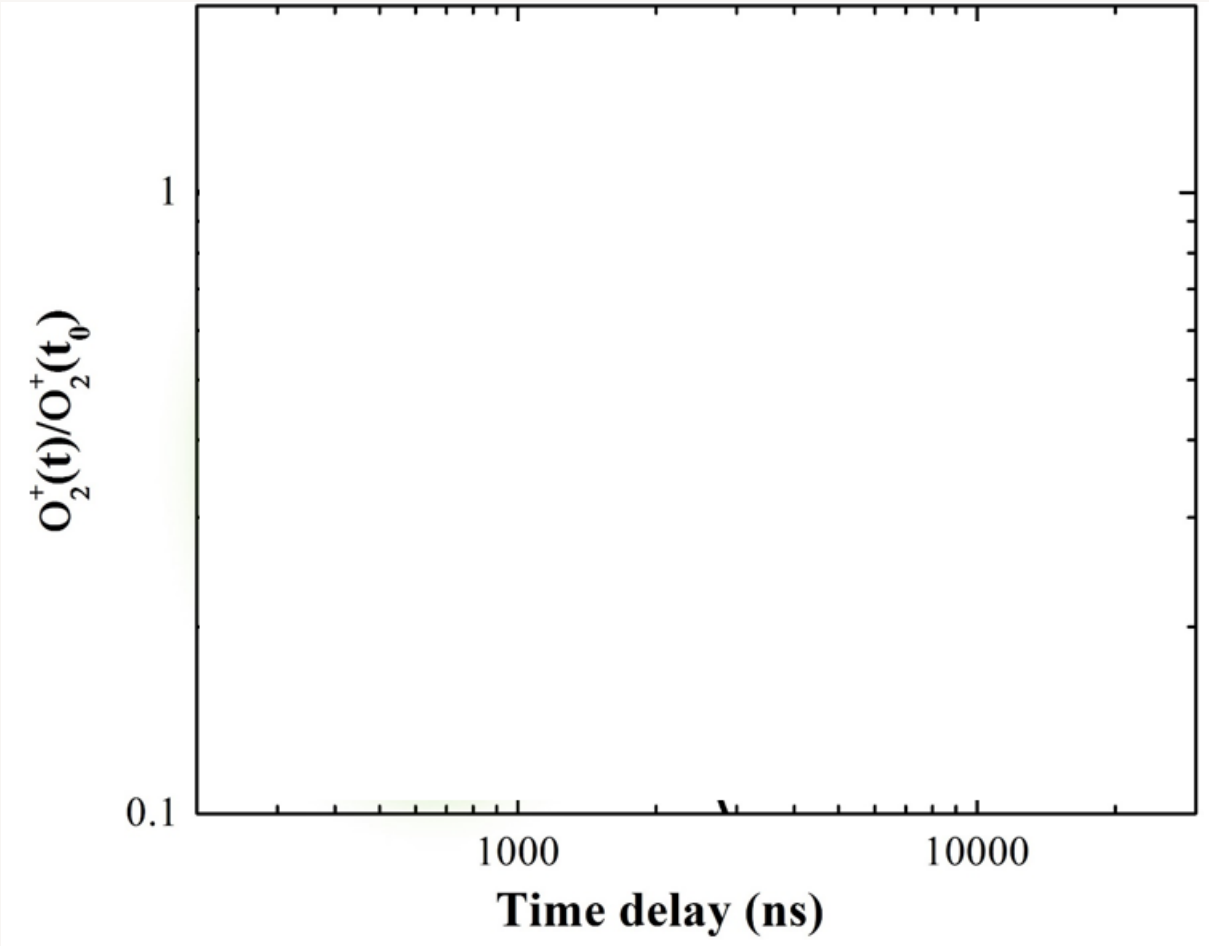

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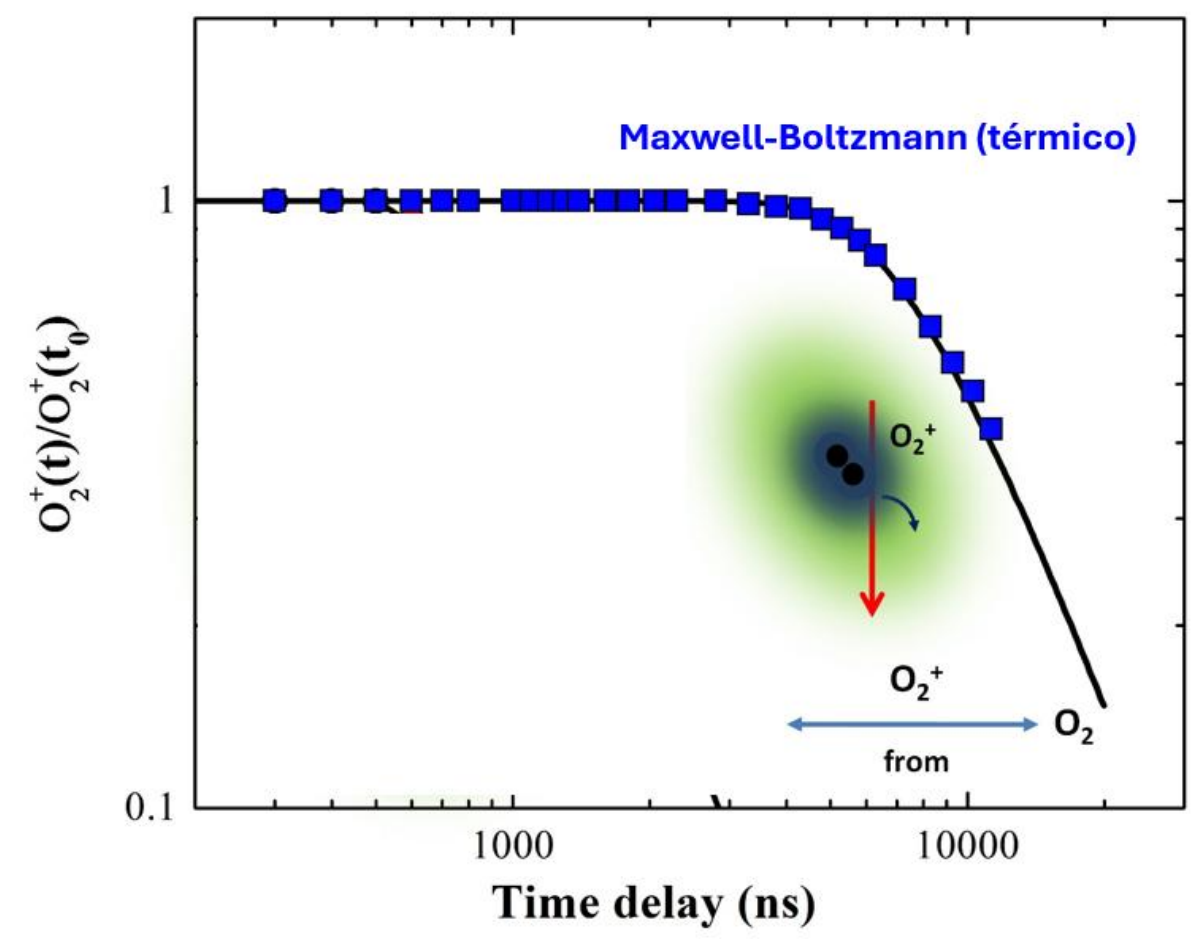

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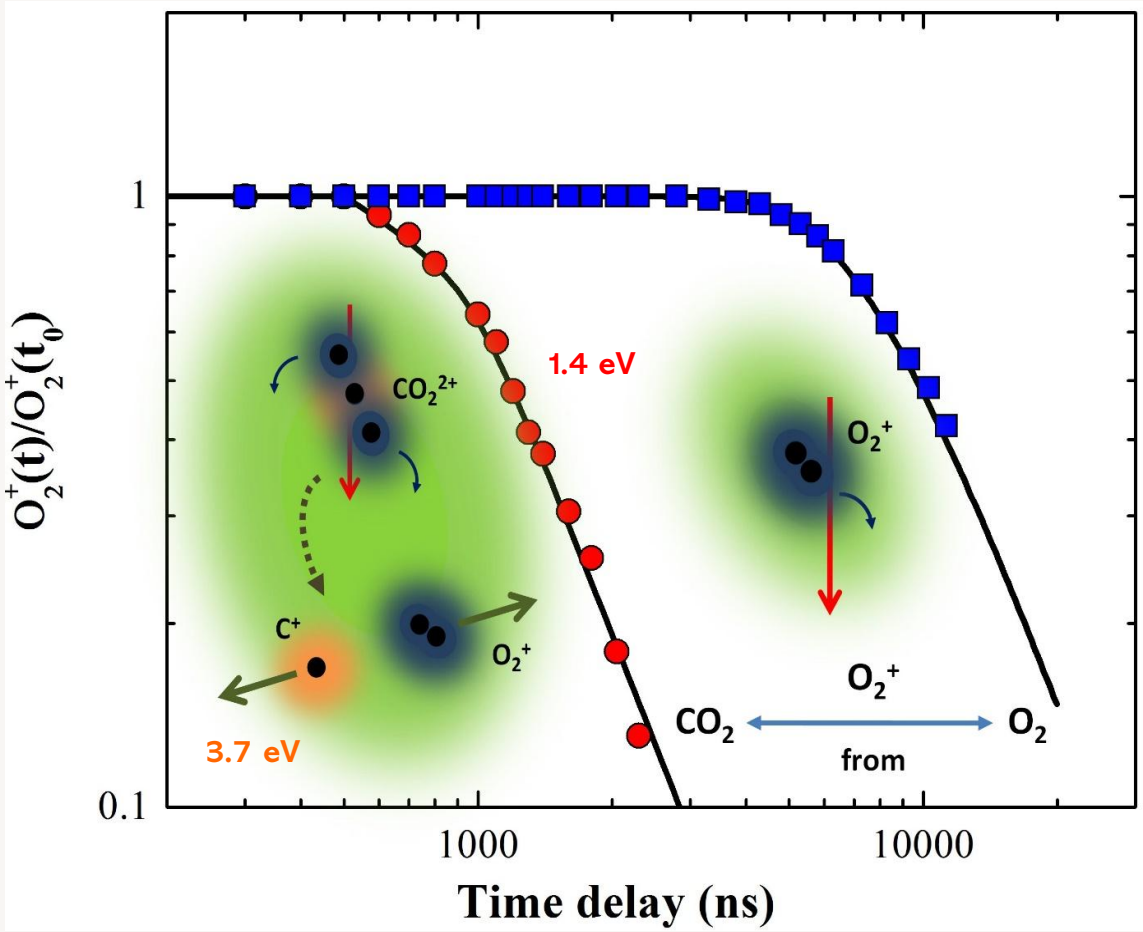

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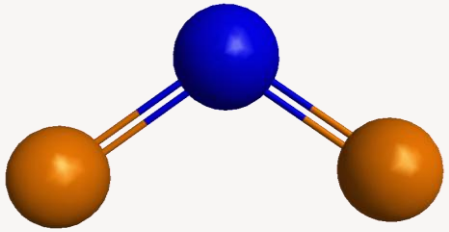

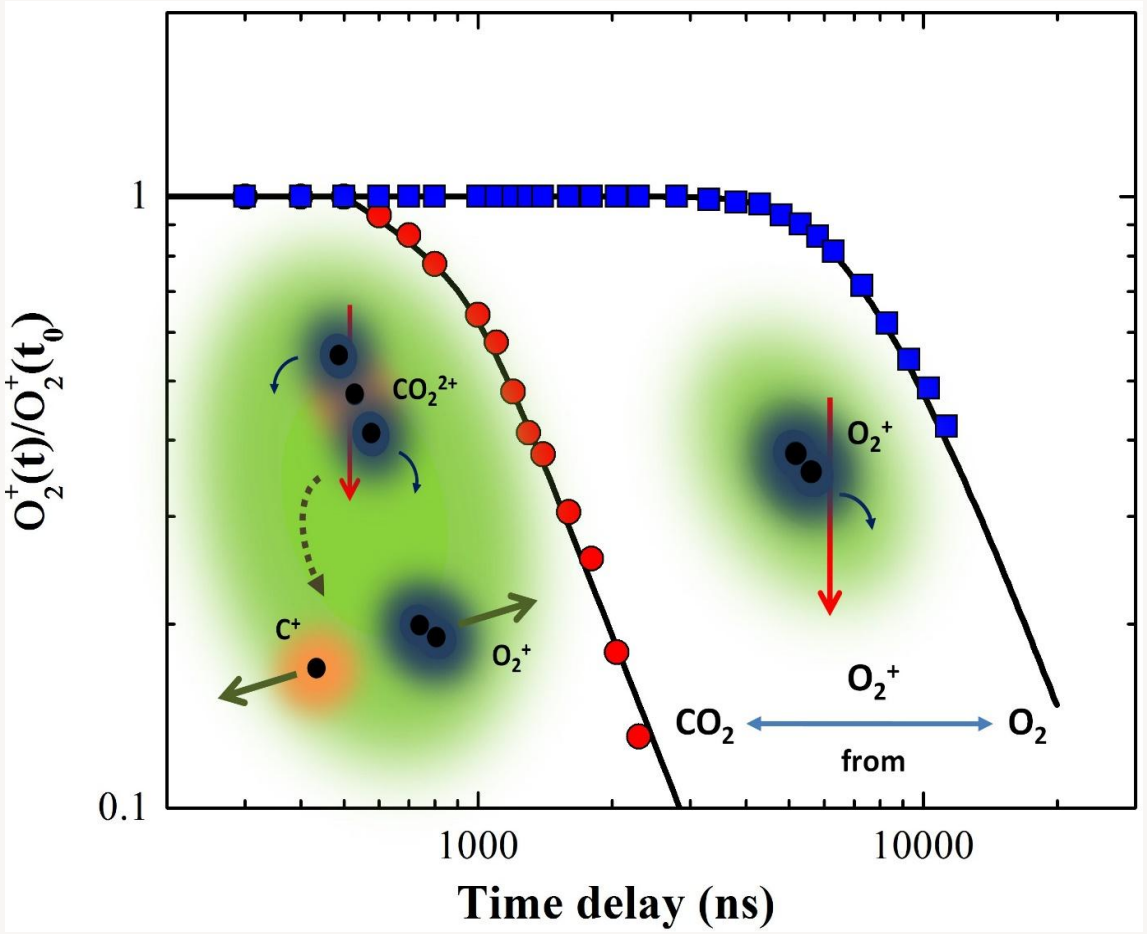

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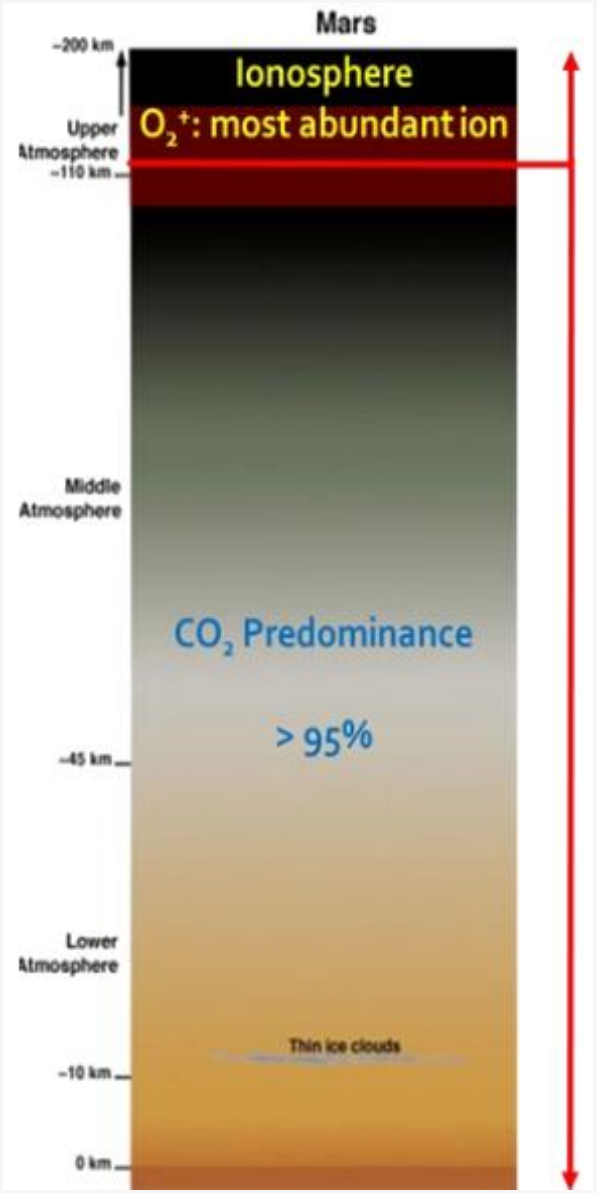
Implicações

- Marte

Velocidade de escape de Marte: 5,0 km/s

Velocidade de O_2^+ a 1,4 eV: 2,90 km/s

Velocidade de C^+ a 3,7 eV: 7,69 km/s



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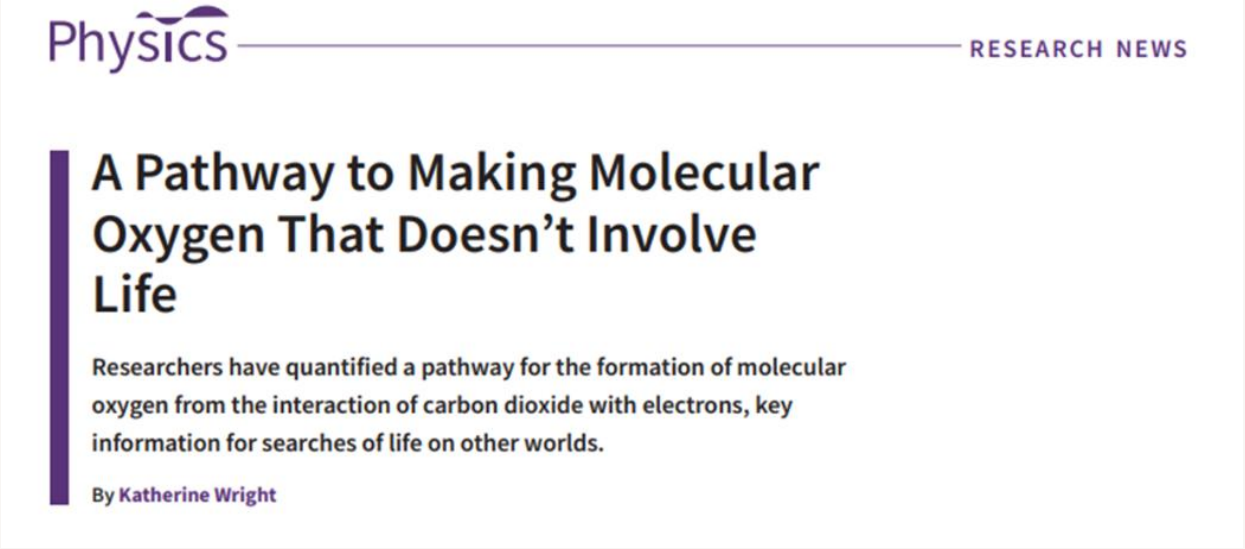
- Busca por vida extraterrestre



Physics — RESEARCH NEWS

A Pathway to Making Molecular Oxygen That Doesn't Involve Life

Researchers have quantified a pathway for the formation of molecular oxygen from the interaction of carbon dioxide with electrons, key information for searches of life on other worlds.

By Katherine Wright

Obrigada

Instituto de Física
Universidade Federal Fluminense

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