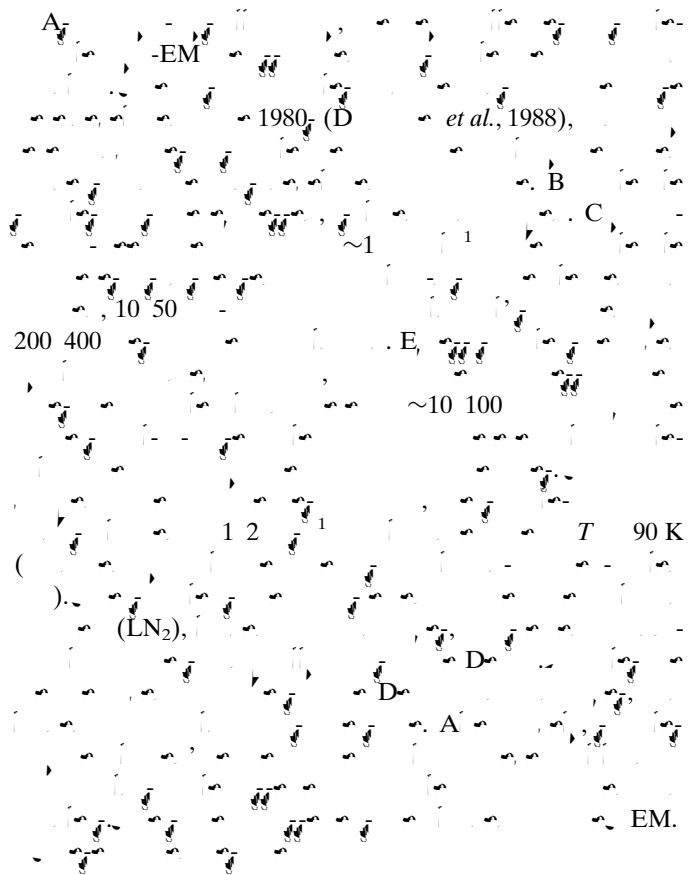


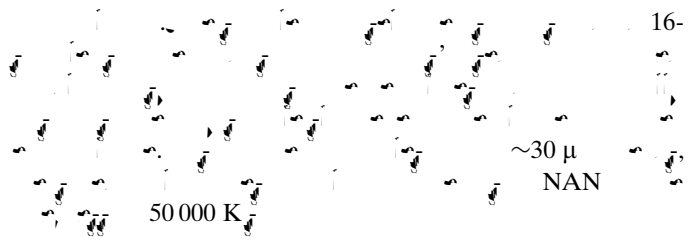
C



160 K
 -EM
 -EM
 (*et al.*, 2021; C & K , 1994).
 CC
 (*et al.*, 2013),
 EM (*et al.*, 2018). CC $\sim 220\,000\text{ K}^{-1}$
 -EM $\sim 0.5\% w/v$
 (*et al.*, 2013).

2.2. Cooling rates achieved in current cryo-EM practice are far below theoretical limits

D
 -EM
 F
 50 50
 12 2 $^{-1}$



3.7. Data processing and single-particle reconstruction

(*et al.*, 2017). A *cryoSPARC* (1) A F
159
0.6 1.8 μ A
C F C F, I, 200
136
20
4 129 019
0.615 A
416 2D
95 834 A *ab initio*

LN₂
 ~1.9 A³/s
 1.2 μ (N *et al.*, 2020)
 ~1.0 1.8 A³/s
 2 μ (*et al.*, 2021),
 0° H, LN₂-1 3,
 FE /
 0.5 0.9 A³/s
 ~0.3 A³/s
 2 μ (*et al.*,
 2021).

2020). A 20
 25 μ -
 -100 - EM
 10 100
 F
 al., 2006),
 2
 150 000 K⁻¹.
 2 1

5. Discussion

5.1. Measurement of cooling rates and the relative effectiveness of liquid cryogenes

D -100 -EM 10 50
 A 12.5 25 μ
 ~25 75 μ
 E
 ~300 000 K⁻¹ (L &
 G 1951),
 70 (C, 2006; *et al.*,

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