

**Supplementary materials - In situ 3D- $\mu$ -Tomography on Particle Reinforced MMC-Lightweight Materials under Creep Conditions**

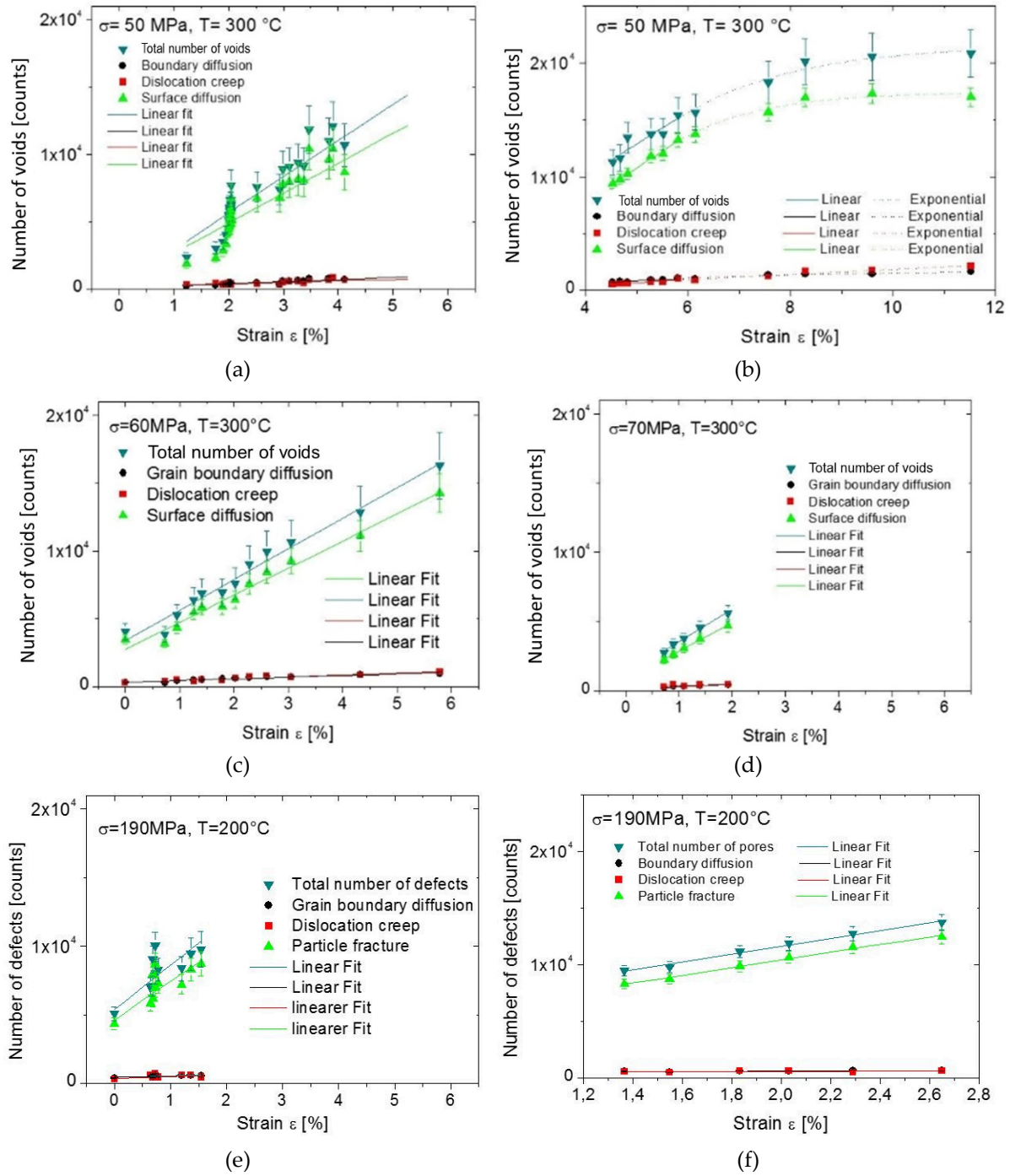
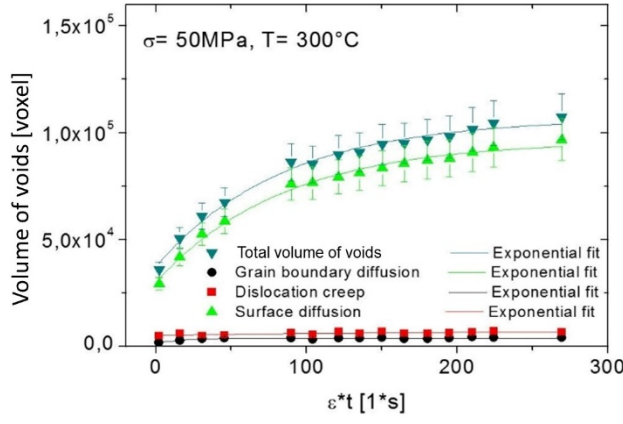
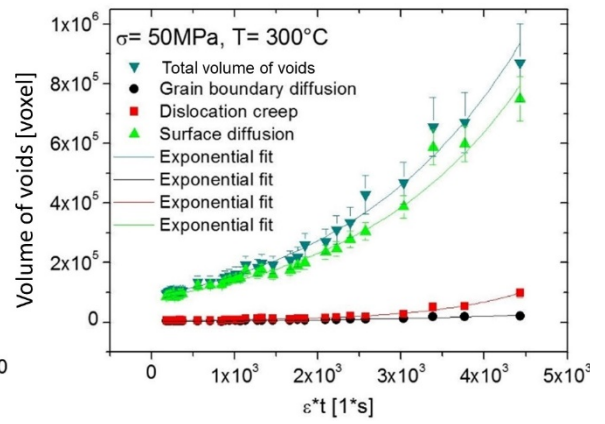


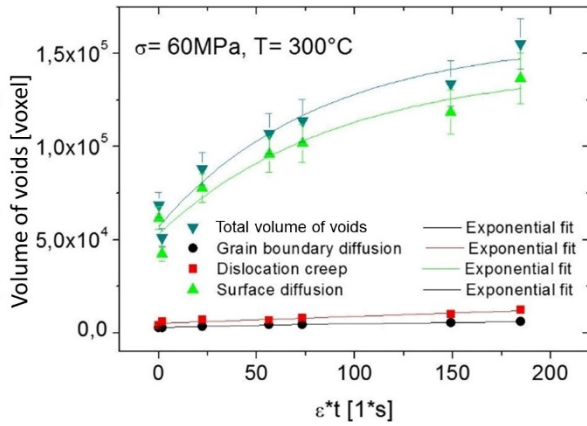
Figure S1. AA6061+ 22 %  $\text{Al}_2\text{O}_3$ , pore formation;  $\sigma = 50$  MPa,  $T = 300$  °C: (a) early + (b) late stage; (c)  $\sigma = 60$  MPa,  $T = 300$  °C: early + late stage; (d)  $\sigma = 70$  MPa,  $T = 300$  °C: early stage;  $\sigma = 190$  MPa,  $T = 200$  °C: (e) early + (f) late stage



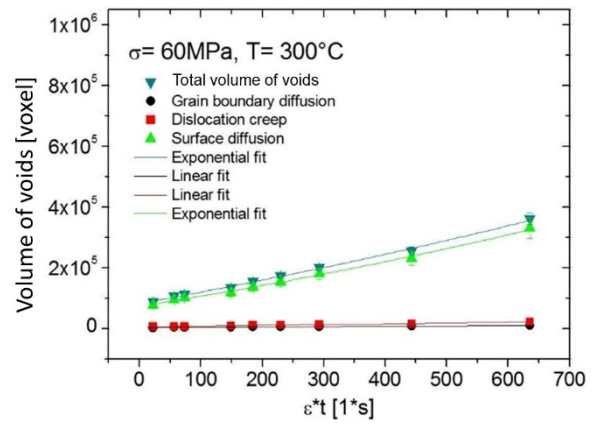
(a)



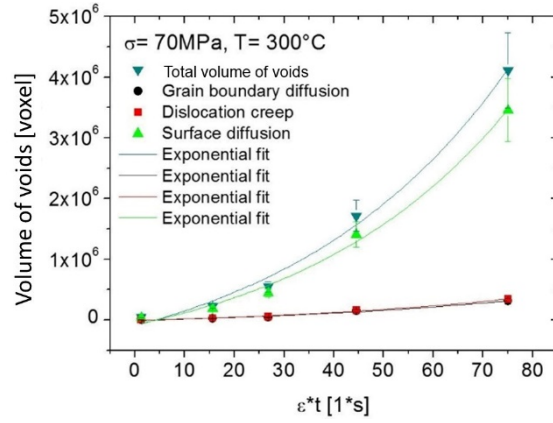
(b)



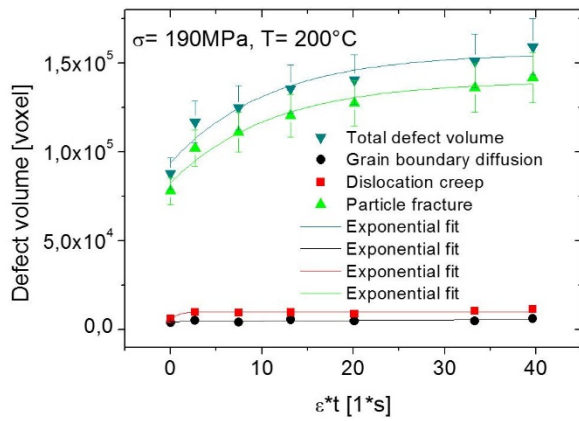
(c)



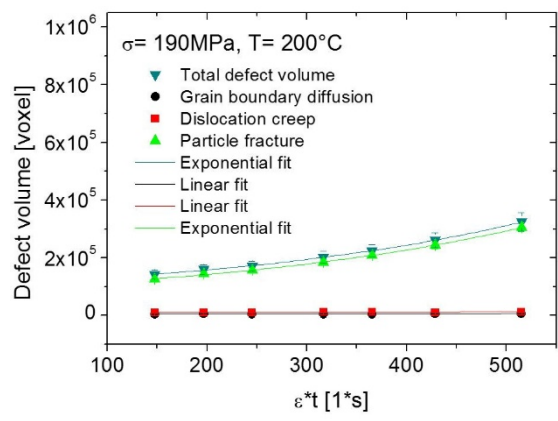
(d)



(e)



(f)



(g)

Figure S2. AA6061+ 22 %  $\text{Al}_2\text{O}_3$ , pore growth, ;  $\sigma = 50 \text{ MPa}$ ,  $T = 300 \text{ }^\circ\text{C}$ : (a) early + (b) late stage;  $\sigma = 60 \text{ MPa}$ ,  $T = 300 \text{ }^\circ\text{C}$ : (c) early + (d) late stage; (e)  $\sigma = 70 \text{ MPa}$ ,  $T = 300 \text{ }^\circ\text{C}$ : early stage;  $\sigma = 190 \text{ MPa}$ ,  $T = 200 \text{ }^\circ\text{C}$ : (f) early + (g) late stage

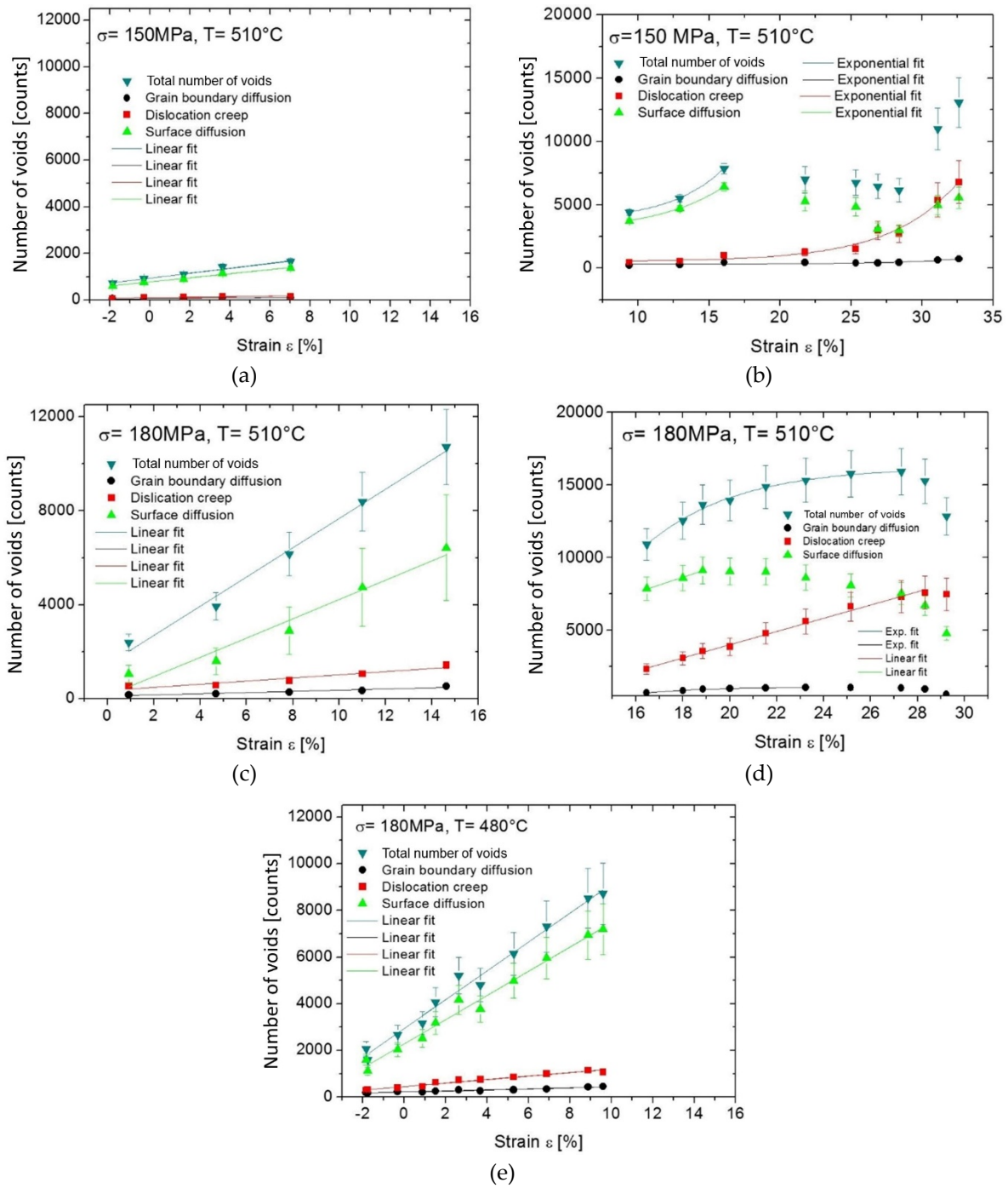
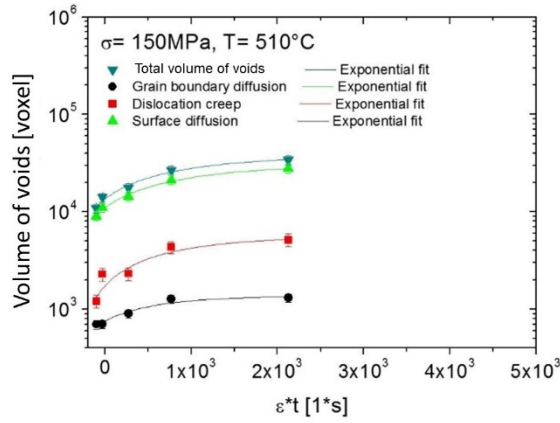
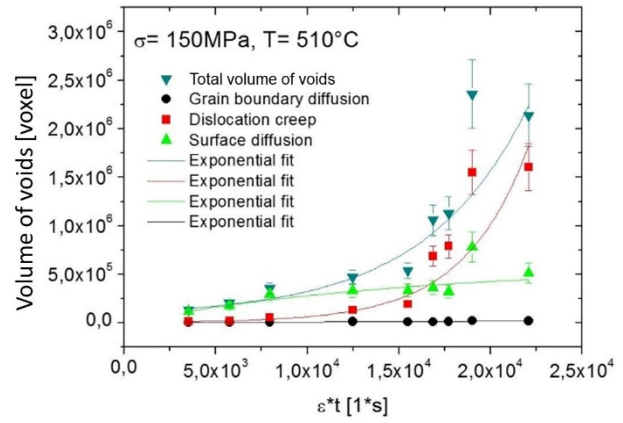


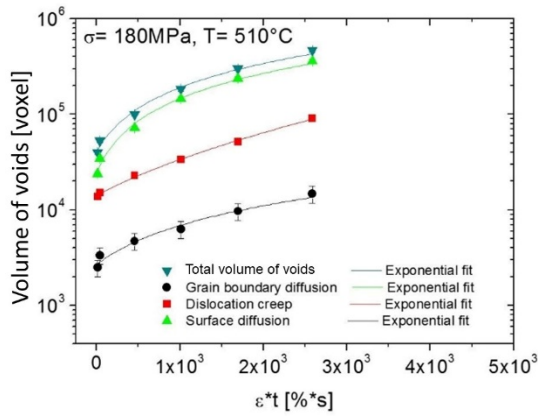
Figure S3. Ti-MMC, pore formation;  $\sigma = 150 \text{ MPa}$ ,  $T = 510 \text{ }^\circ\text{C}$ : (a) early + (b) late stage;  $\sigma = 180 \text{ MPa}$ ,  $T = 510 \text{ }^\circ\text{C}$ : (c) early + (d) late stage; (e)  $\sigma = 180 \text{ MPa}$ ,  $T = 480 \text{ }^\circ\text{C}$ : early stage



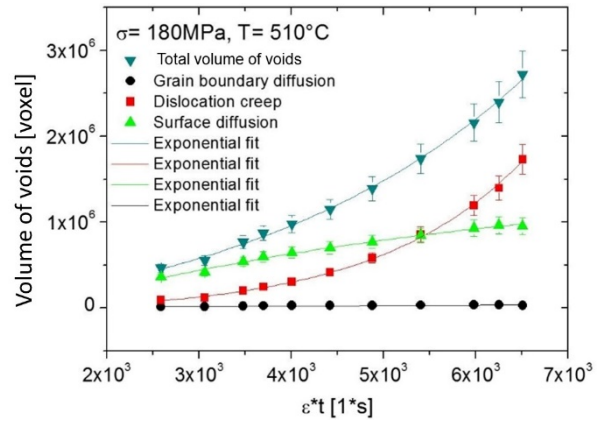
(a)



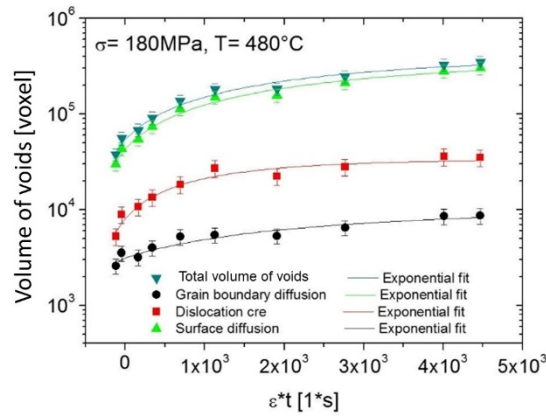
(b)



(c)



(d)



(e)

Figure S4. Ti-MMC, pore growth;  $\sigma = 150$  MPa,  $T = 510$  °C: (a) early + (b) late stage;  $\sigma = 180$  MPa,  $T = 510$  °C: (c) early + (d) late stage; (e)  $\sigma = 180$  MPa,  $T = 480$  °C: early stage