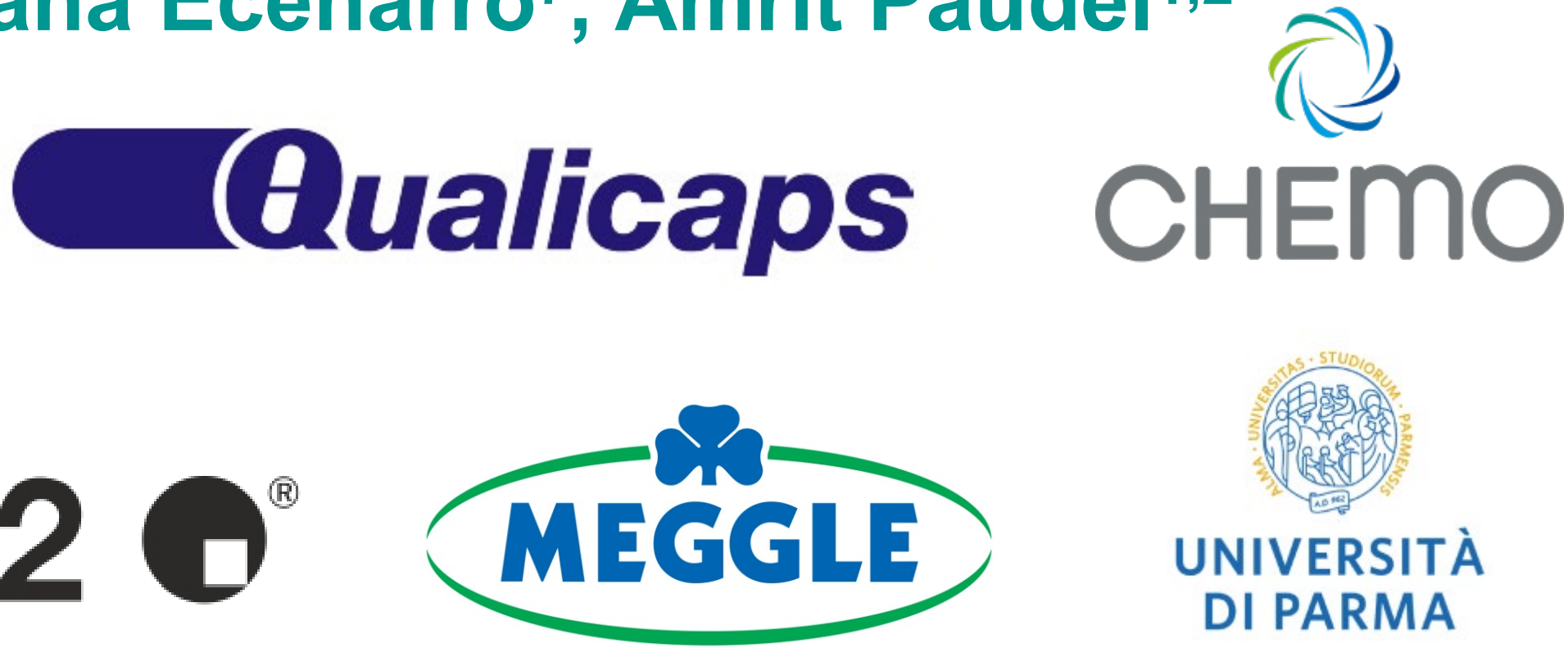


Capsule filling process-induced tribo-charging behaviour of HPMC and gelatin capsules with different external lubricants

Thomas Wutscher^{1,2}, Milica Stankovic-Brandl¹, Sarah Zellnitz¹, Mirjam Kobler³, Francesca Buttini^{1,4}, Laura Andrade⁵, Veronica Daza⁵, Alberto Mercandelli⁶, Stefano Biserni⁶, Guerino D'Elpidio⁶, Susana Ecenarro⁷, Amrit Paudel^{1,2}

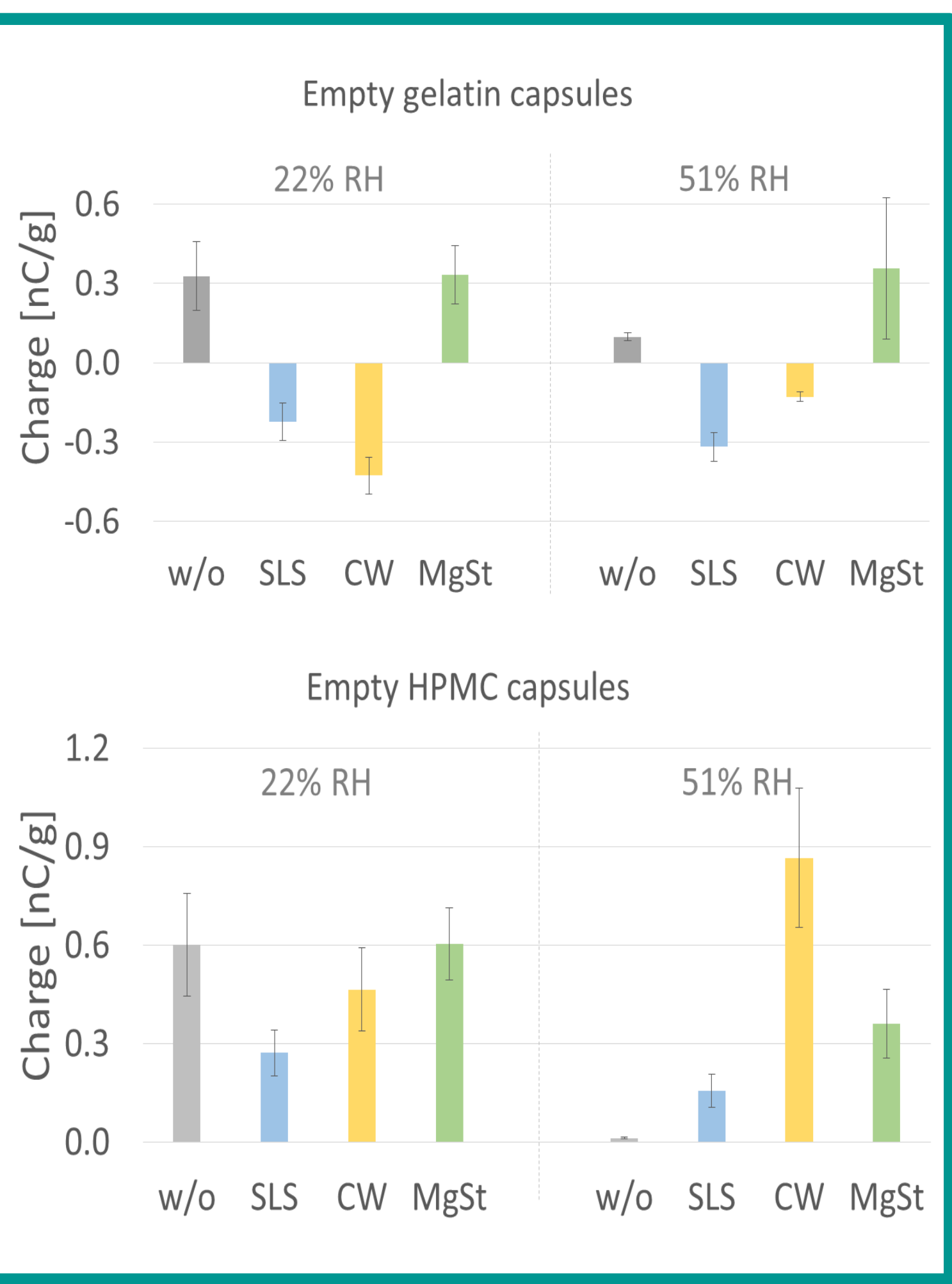
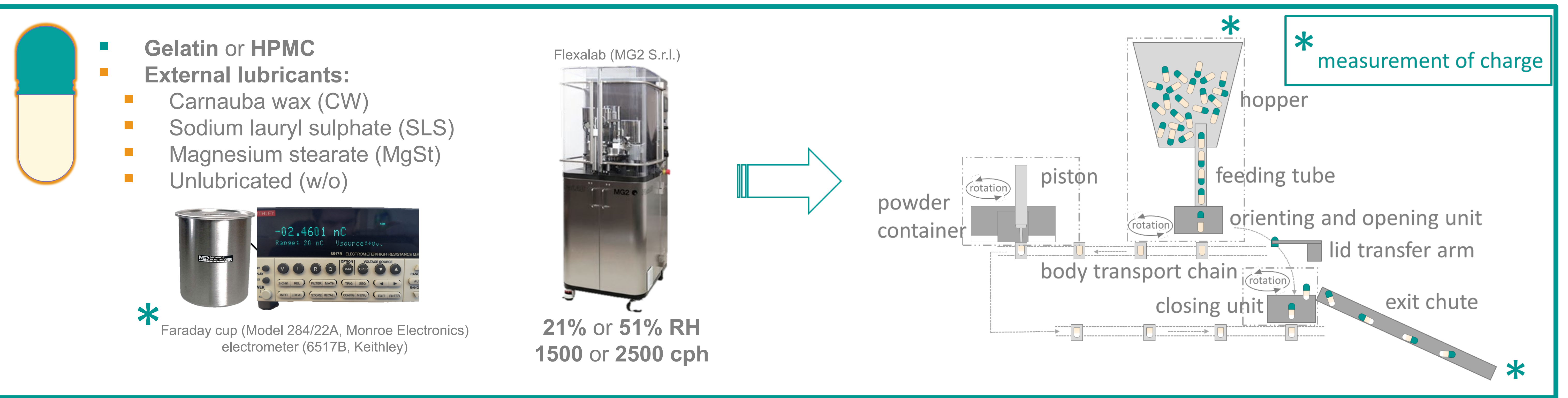
¹Research Center Pharmaceutical Engineering GmbH, Inffeldgasse 13, Graz, 8010 Graz, Austria
²Institute of Process and Particle Engineering, Graz University of Technology, Inffeldgasse 13, 8010 Graz, Austria
³MEGGLE Excipients and Technology, Megglestraße 6-12, 83512 Wasserburg, Germany
⁴Food and Drug Department, University of Parma, Parco delle Scienze 27, 43121 Parma, Italy
⁵Laboratorios Liconsa, S.A. C/ El tejido 2, 19200 Guadalajara, Spain
⁶MG2, Via del Savena 18, 40065 Pianoro, Bologna, Italy
⁷Qualicaps Avda. Monte Valdelatas 4, 28108 Alcobendas, Madrid, Spain



Introduction

Electrostatic charging of powders and materials can negatively impact the manufacturing of inhalation products. During capsule filling, tribo-charging of the capsules induced by the contact with the capsule filler components could lead to rocking and jumping of the capsules further increasing the amount of rejected capsules. For the improvement of processability and flowability of the capsules external lubricants are applied. This study attempts to close the gap between processability in a capsule filling machine, the electrostatic charge and the lubricant used and also takes into account different filling parameters like the capsule filling speed and the relative humidity (RH) during the filling process. The charging tendency of commercially available HPMC and gelatin capsules with different external lubricants have been compared to unlubricated capsules before and after going through a capsule filling machine.

Materials & Methods

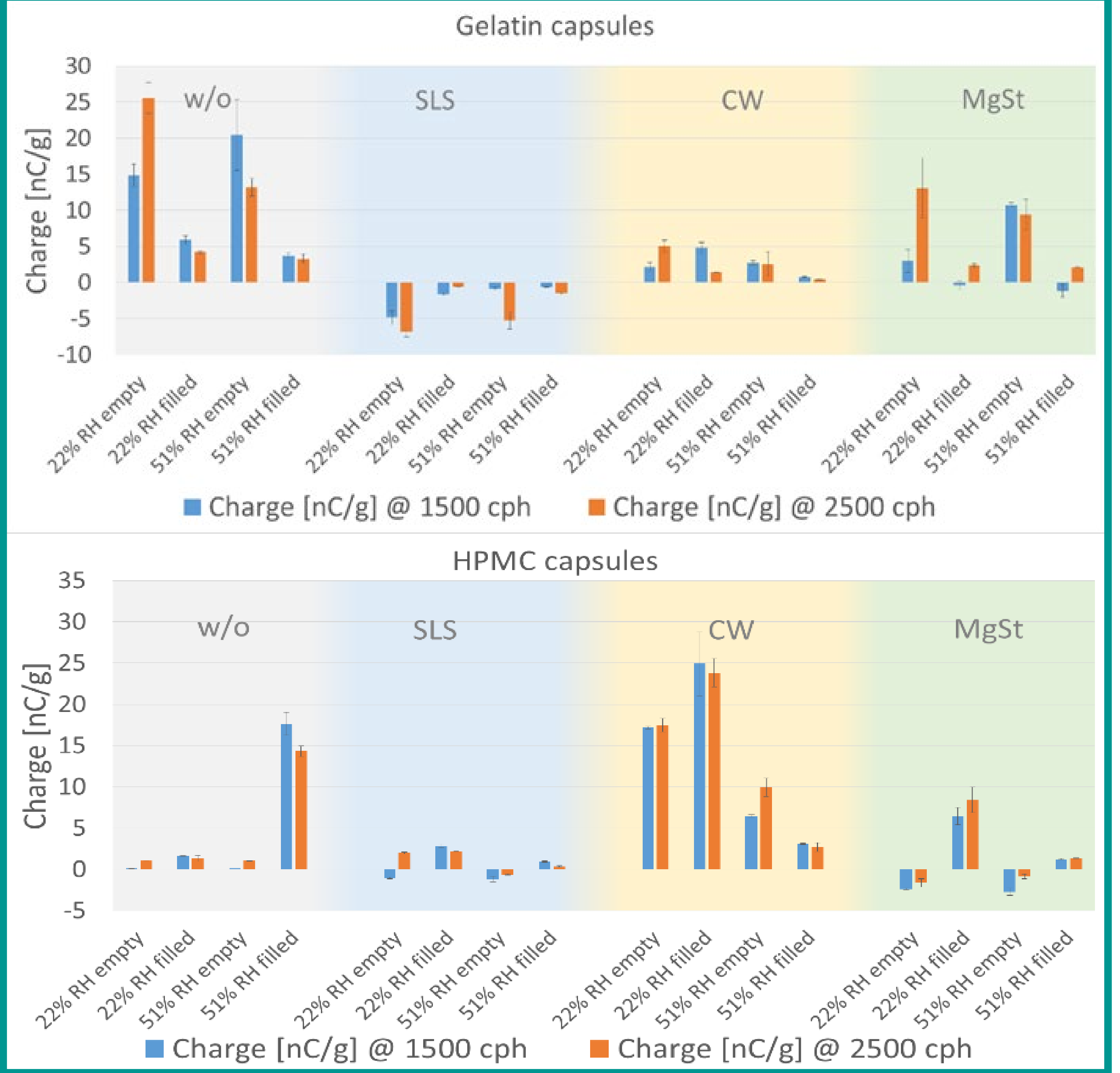


Results

- Stored capsules have very low charge
- Empty gelatin capsules charge more than filled ones
- Gelatin capsules have lower charge when lubricated
- HPMC capsules tend to charge negatively when empty and positively when filled
- Less effect of filling speed on charging behaviour
- Increasing RH lowers charging tendencies in most cases

Conclusion

- Capsules are not charged after storage and pouring out of bag, charge accumulates during capsule filling process
- In-process charging is differently influenced by external lubricants on variable capsule types



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