Supplementary Information (SI) for Physical Chemistry Chemical Physics.
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Supporting information for

Stabilizing protein pharmaceuticals by imidazolium-type zwitterions

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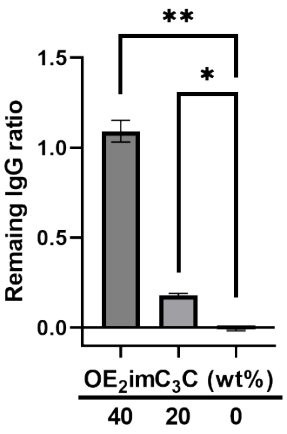

Figure S1 The remaining IgG ratio after shaking at 1,000 rpm and 80 °C for 2 h in OE_2imC_3C/PBS solutions. IgG did not dissolve in the 60 wt% OE_2imC_3C solution. Error bars represent the standard error. $^{**}p < 0.01$ and $^{*}p < 0.05$, vs. 0 wt%.

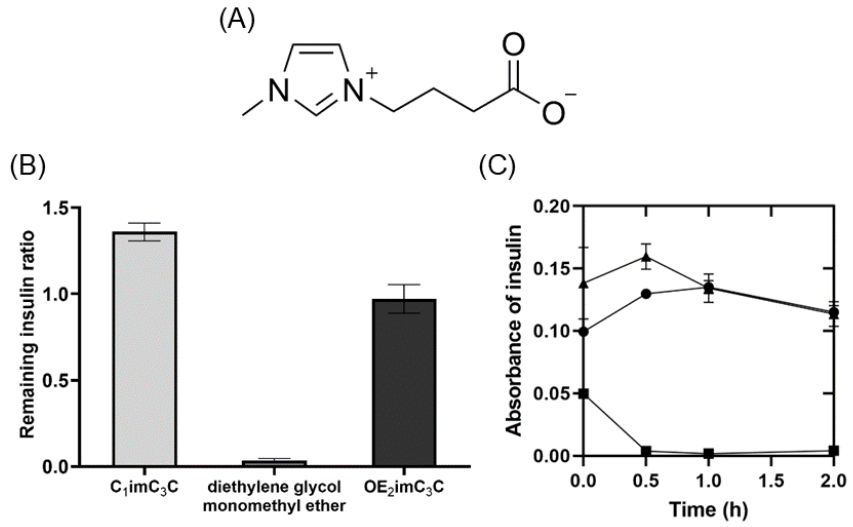

Figure S2 (A) Chemical structure of C_1imC_3C. (B) Remaining insulin ratio and (C) absorbance of insulin after shaking at 1,000 rpm and 80 °C for 1 h in C_1imC_3C (●), diethylene glycol monomethyl ether (■), or OE_2imC_3C (▲) solutions. Error bars represent the standard errors.

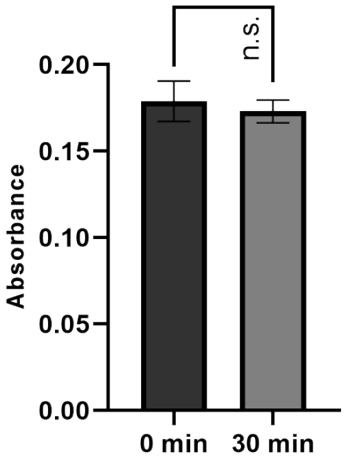

Figure S3 Absorbance derived from Bradford reagent (595 nm) after heating at 80 °C in the insulin/40 wt% OE_2imC_3C solution. Error bars represent the standard error. Data were analyzed using a paired *t* test.

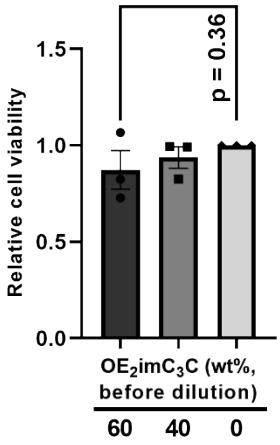

Figure S4 Relative cell viability after 6 days incubation in the serum-containing medium with OE_2imC_3C after 714-fold dilution (biological triplicates). Error bars represent the standard error. Data were analyzed using one-way ANOVA.