Ionic liquid capped carbon dots as the high-performance friction-reducing and antiwear additive of poly(ethylene glycol)

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Scheme S1 Schematic illustration of formation procedures of the CDs-B₃r.

Fig. S1 Preparation procedures of CQDs-NTf² from CQDs-B₃r by the anion exchange.

Fig. S2 XRD pattern of CDs-B₃r.
**Fig. S3** TGA curve of CDs\textsubscript{NTf2} under air atmosphere.

**Fig. S4** (a) Mean friction coefficients and (b) mean wear scar diameters lubricated by PEG and 0.3 wt\% CDs\textsubscript{NTf2}/PEG suspension under tested duration times of 120 and 320 min (load: 392 N; rotate speed: 1200 r/min).
**Fig. S5** EDX spectra of the worn surfaces of lower steel balls lubricated by PEG (black line) and 0.3 wt% CDs_{NTf}/PEG suspension (red line) under loads of (a) 392 N and (b) 600 N.