**Supplementary Material**

Deformable liquid metal polymer composites with tunable electronic and mechanical properties

*Amanda Koh, Jennifer Sietins, Geoffrey Slipher\*, Randy Mrozek\**

Dr. Amanda Koh, Geoffrey Slipher

Autonomous Systems Division, Vehicle Technology Directorate, U.S. Army Research Laboratory, Aberdeen Proving Ground, 21005 USA

Dr. Jennifer Sietins

Manufacturing Science and Technology Branch, Weapons and Materials Research Directorate, U.S. Army Research Laboratory, Aberdeen Proving Ground, 21005 USA

Dr. Randy Mrozek

Polymers Branch, Weapons and Materials Research Directorate, U.S. Army Research Laboratory, Aberdeen Proving Ground, 21005 USA

\* Co-Corresponding Authors

Geoffrey Slipher: geoffrey.a.slipher.civ@mail.mil

Randy Mrozek: randy.a.mrozek.civ@mail.mil

S:\Koh_A\Figures\Figure S1a 1.tifS:\Koh_A\Figures\Figure S1b 1.tif

**FIG S1.** Viscosity of unfilled PDMS in the strain (at 1Hz) and frequency (at 0.1% strain) domains.

S:\Koh_A\Figures\Figure S2a 1.tifS:\Koh_A\Figures\Figure S2b 1.tif

**FIG S2**. Viscosity of mineral oil-in-PDMS uncured dispersions at 10, 20, and 30 vol% in the strain (at 1Hz) and frequency (at 0.1% strain) domains.

S:\Koh_A\Figures\Figure S3a.tifS:\Koh_A\Figures\Figure S3b.tif

**FIG S3**. Storage modulus (filled points) and loss modulus (unfilled points) of galinstan-in-PDMS dispersions with V41:T11 in the strain (at 1Hz) and frequency (at 0.1% strain) domains.

S:\Koh_A\Figures\Figure S4a.tifS:\Koh_A\Figures\Figure S4b.tif

**FIG S4**. Storage modulus (filled points) and loss modulus (unfilled points) of nickel-in-PDMS dispersions with V41:T11 in the strain (at 1Hz) and frequency (at 0.1% strain) domains.

S:\Koh_A\Figures\Figure S5a 1.tifS:\Koh_A\Figures\Figure S5b 1.tif

**FIG S5**. Rheology of galinstan measured with a parallel plate geometry in the strain (at 1Hz) and frequency (at 0.1% strain) domains.

S:\Koh_A\Figures\Figure S6a 1.tifS:\Koh_A\Figures\Figure S6b 1.tif

**FIG S6.** Storage modulus (filled points) and loss modulus (unfilled points) of mineral oil-in-PDMS cured dispersions at 10, 20, and 30 vol% in the strain (at 1Hz) and frequency (at 0.1% strain) domains.

S:\Koh_A\Figures\Figure S7a 1.tifS:\Koh_A\Figures\Figure S7b 1.tif

**FIG S7.** Rheology of phase inverted PDMS-in-galinstan dispersions in the strain (at 1Hz) and frequency (at 0.1% strain) domains.

S:\Koh_A\Figures\Figure S8 1.tif

**FIG S8**. Impedance vs. frequency from 1kHz to 1MHz of phase inverted PDMS-in-galinstan dispersions.