Supporting Information：

Title: Durable and Modified Foam for Cleanup of Oil Contaminations and Separation of Oil-water Mixtures.

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Information on EDS spectra, stress-strain curves, situation of immersed in the water bath, optical image after floating on HCl and NaOH solution, experiment of removing deionized water, collection of oil and organic solvent, weight percentage of the as-prepared samples; three videos showing the magnetic property, unsinkable property and oil absorption process of the sample.

Figure:

Figure. S1 EDS spectra of (a) oleic acid coated Fe_3O_4, (b) DMPF and (c)DMMPF.

Figure. S2 Stress-strain curves at 80% strain of (a) pure foam, (b) DMPF, and (c) DMMPF in the process of repeated mechanical compression.

Figure S3. Pictures of piece of (a) pure foam and (b) as-prepared foam placed on a water bath. (c) and (d) The pictures of DMMPF immersed in the water bath by an external force.

Figure S4. Optical image of a water droplet on DMMPF after floating on 1.0 M (a) HCl solution and (b) NaOH solution for 72h.

Figure S5. Experiment of removing deionized water with DMMPF under extra force.

Figure. S6 (a) Stress-strain curves of DMMPF after absorption-desorption 60 cycles (b) and (c) SEM images of DMMPF after absorbing organic liquid after 60 separation cycles at different magnification.

Figure S7. Collection of (a) lubricating oil and (b) benzene from the as-prepared DMMPF by mechanical squeezing.

Table:

Table S1 Weight percentage accounted for the element of the as-prepared samples

Table S2 Comparison of similar oil absorbing foams/sponges[a]

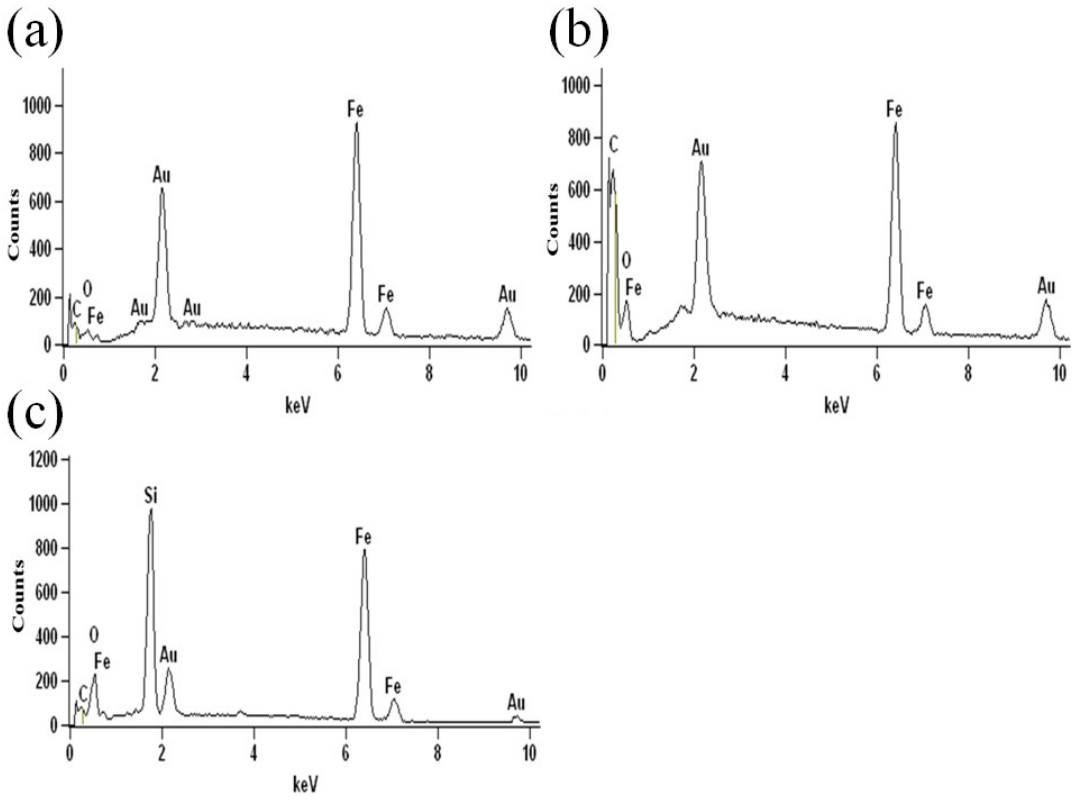
Video:

Video S1: The exhibition of magnetic property of the durable and modified magnetic polystyrene foam.

Video S2: The display of unsinkable property of the durable and modified magnetic polystyrene foam by external force.

Video S3: Removal of lubrication oil from the water surface by the durable and modified magnetic polystyrene foam. The lubrication oil was labeled by Sudan I for clear observation.

Figure caption:



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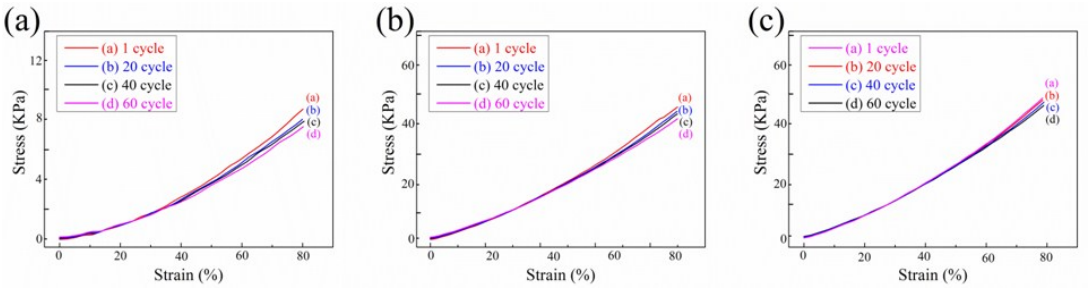

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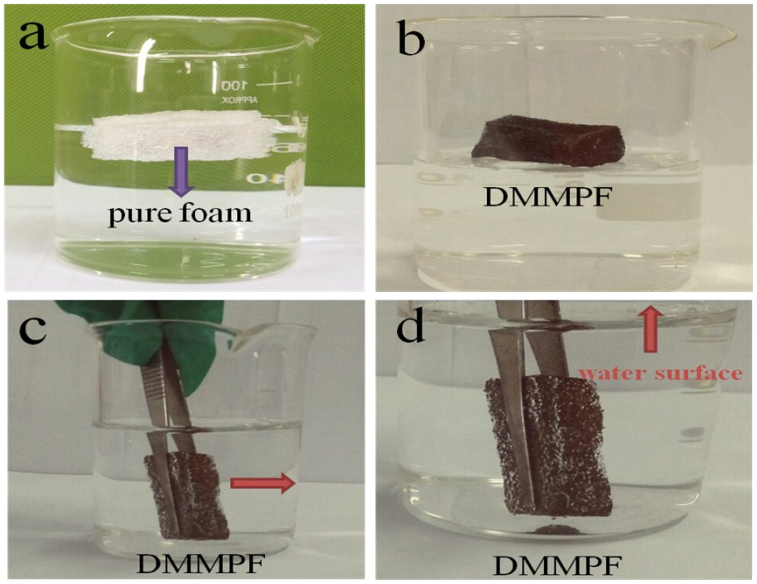

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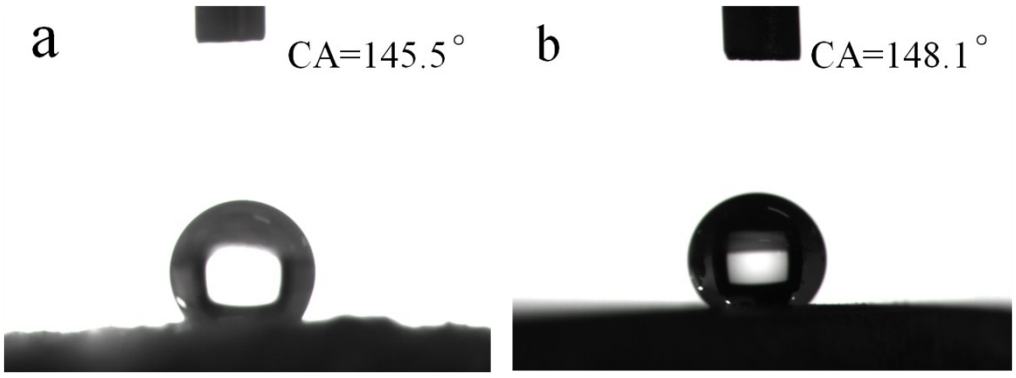

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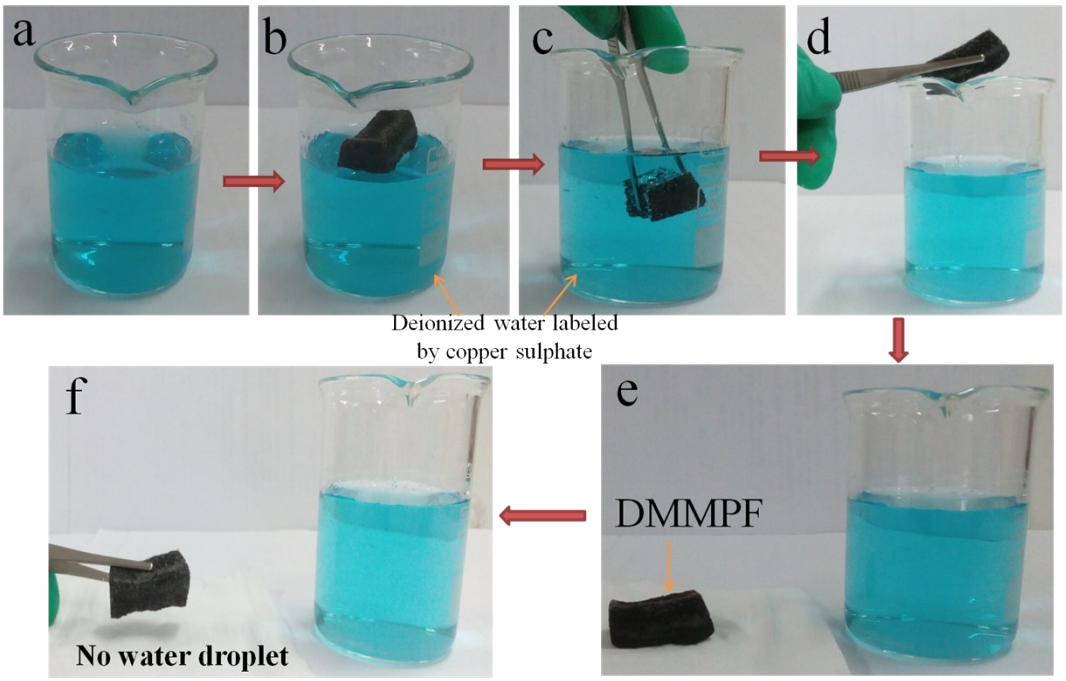
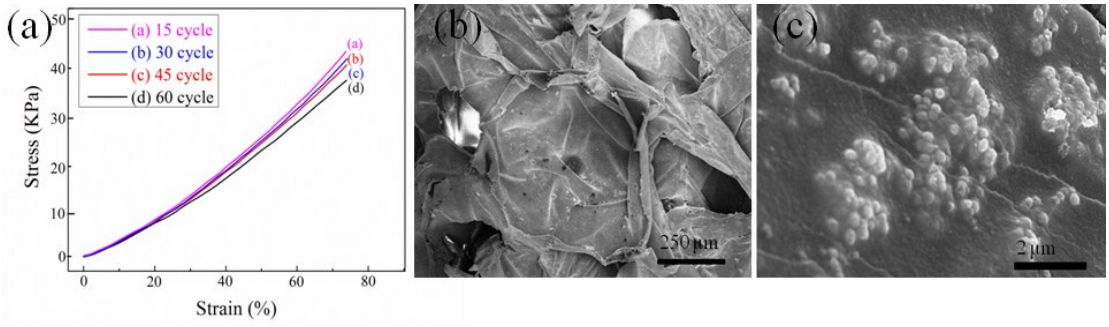


Fig. S5. Experiment of removing deionized water with DMMPF under extra force.



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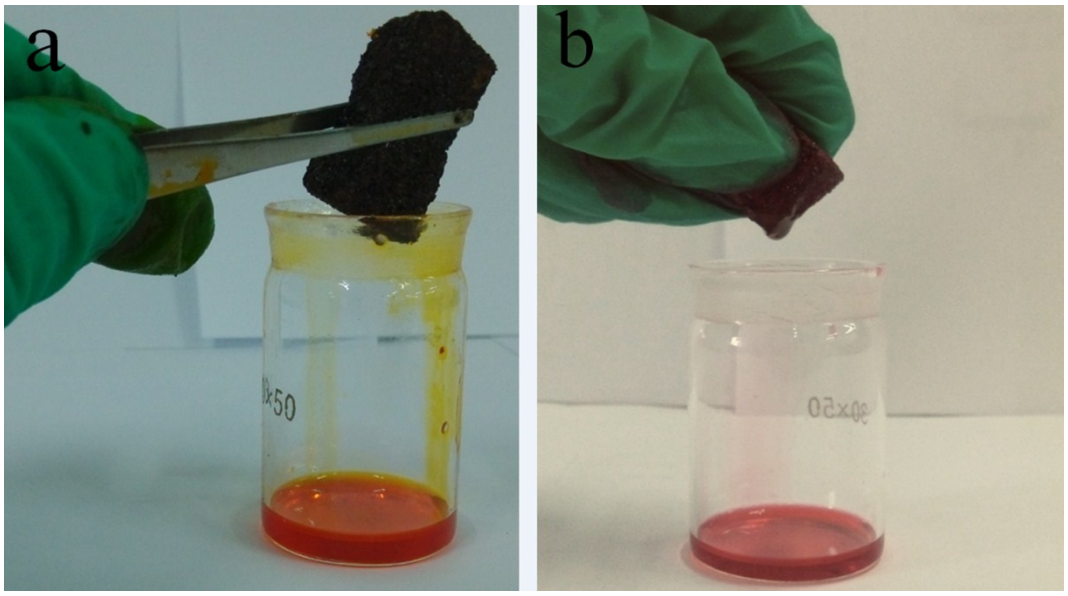

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Table caption:

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Samples	*C (%)*	*O(%)*	*Si(%)*	*Fe(%)*	*Au(%)*
Oleic acid coated Fe_3O_4	14.45	3.50	0	38.29	43.76
DMPF	34.40	6.10	0	21.94	37.56
DMMPF	22.85	14.72	14.62	38.56	9.24

Table S2 Comparison of similar oil absorbing foams/sponges[a]

Absorbents	Absorbency (g/g)	Cost	Mechanical property	Wettability	Ref.
PU sponges	39.2	-	- -	√	36
PDMS sponge	12	+	-	√	21
Graphene oxide foam	100	++	++	√√	31
RGO sponge	45	++	-	√√	29
PU soft foam	22.4	+	+	√	30
Spongy graphene	20	++	+	√√	22
PUF foam	49.9	+	+	√√	19
PUR foam	4.5	+	- -	√√√	38
PFA/SiO_2-coated sponge	63	++	-	√√	37
PU–CNT–PDA–ODA sponge	35.0	+	-	√√√	35
MPG foam	27.0	++	-	√√√	43
DMMPF	40.1	- -	+	√√√	This work

[a]Noting: "- -"very low, "-" low, "+"high, "++"very high, "√" hydrochloricity, "√√" high hydrochloricity, "√√√" superhydrophobicity.