

## Supplementary Materials

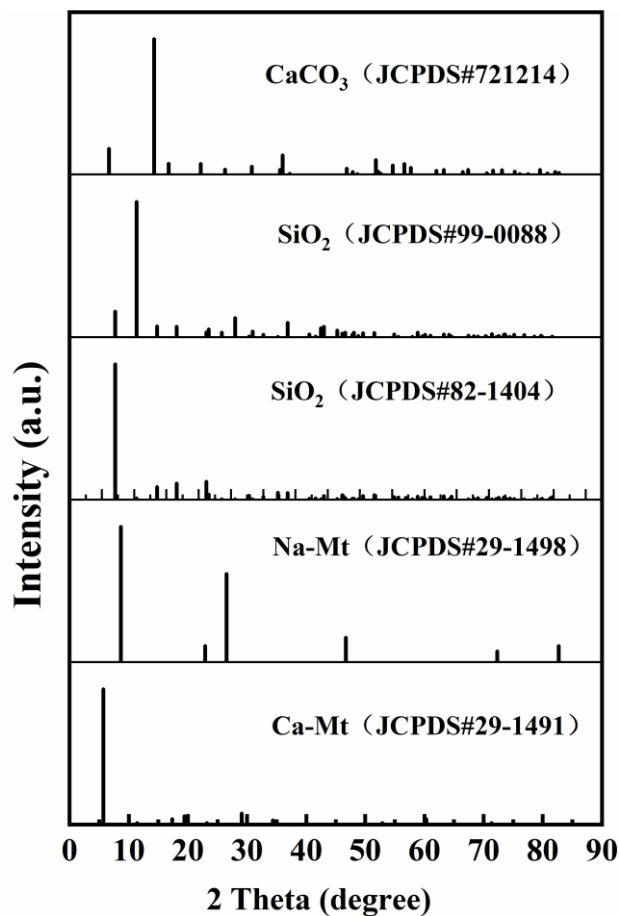


Fig. S1. Standard peaks of Ca-Mt, Na-Mt, SiO<sub>2</sub>, and CaCO<sub>3</sub>.

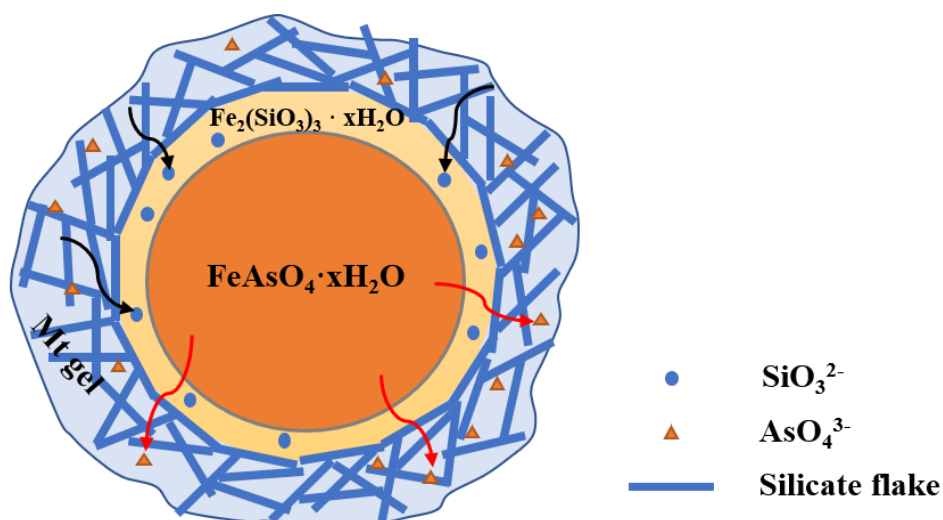
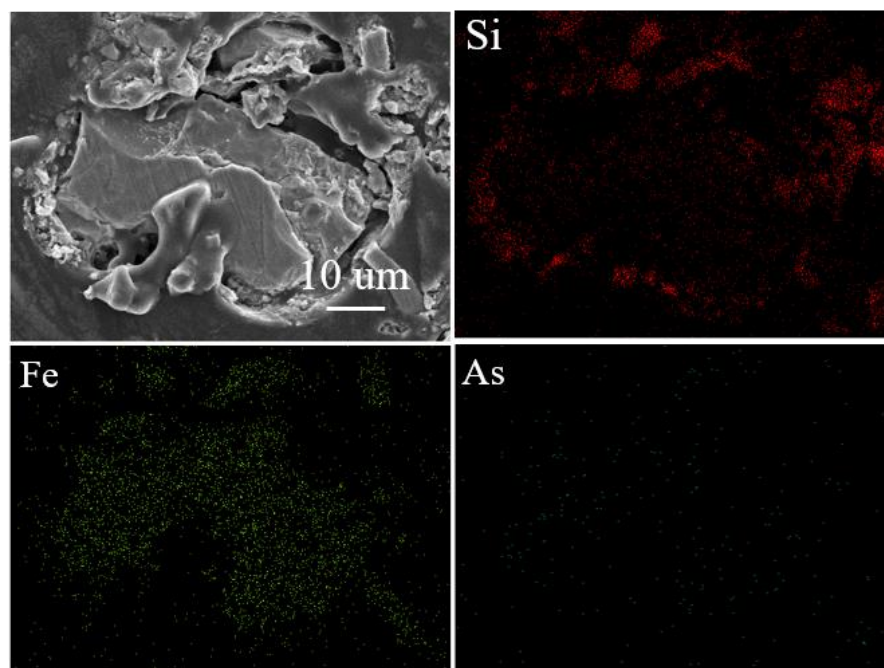


Fig. S2. Depiction of a C-IAD particle, and the possible mechanism of inhibiting As release.



**Fig. S3.** SEM image and elemental X-ray maps of the cross section of C-IAD (Mt/IAD 0.75; aged at 25°C).

**Table S1.** Chemical Composition of Raw Materials (% by Weight)

Compound Conc. (wt%)	Sample			
	Montmorillonite	Montmorillonite inorganic gel	IAD	C-IAD
SiO <sub>2</sub>	72.897	66.106	3.077	42.145
Fe <sub>2</sub> O <sub>3</sub>	1.756	1.685	34.573	21.483
As <sub>2</sub> O <sub>3</sub>	-	-	11.182	5.673
SO <sub>3</sub>	0.076	0.025	28.625	9.678
Al <sub>2</sub> O <sub>3</sub>	15.345	13.820	12.442	13.818
Na <sub>2</sub> O	0.196	3.523	8.290	2.041
CaO	3.857	9.747	0.104	4.289
P <sub>2</sub> O <sub>5</sub>	0.023	0.025	0.937	0.712
TiO <sub>2</sub>	0.167	0.151	0.420	0.309
K <sub>2</sub> O	0.302	0.289	0.268	0.296

**Table S2.** Chemical Element of C-IAD with Different Mt/IAD Mass Ratios (% by Weight)

Mt/IAD mass ratios	Element Conc. (%)										
	O	Fe	As	Si	Al	S	Na	Ca	P	Ti	K
0.00	40.693	24.182	8.469	1.438	6.585	11.463	6.150	0.074	0.409	0.252	0.223
0.10	41.034	23.273	8.442	7.237	7.604	8.208	1.979	0.889	0.472	0.456	0.202
0.25	42.546	20.829	6.558	12.650	7.323	5.690	2.051	1.067	0.416	0.290	0.272
0.50	44.130	15.541	4.654	16.952	7.359	4.504	2.333	1.992	0.326	0.230	0.208
0.75	44.737	14.026	4.054	19.700	7.313	3.075	1.514	3.066	0.311	0.185	0.246
1.00	44.992	12.330	3.541	20.531	6.987	3.531	1.936	3.249	0.209	0.180	0.248
1.25	45.135	12.289	3.344	21.091	7.339	3.519	2.150	3.701	0.251	0.163	0.253
1.50	45.517	10.840	3.138	22.937	7.437	2.744	2.571	4.058	0.226	0.154	0.269

**Table S3.** Chemical Composition of C-IAD with Different Mt/IAD Mass Ratios (% by Weight)

Mt/IAD mass ratios	Compound Conc. (%)									
	Fe <sub>2</sub> O <sub>3</sub>	SO <sub>3</sub>	SiO <sub>2</sub>	As <sub>2</sub> O <sub>3</sub>	Al <sub>2</sub> O <sub>3</sub>	Na <sub>2</sub> O	CaO	P <sub>2</sub> O <sub>5</sub>	TiO <sub>2</sub>	K <sub>2</sub> O
0.00	34.573	28.625	3.077	11.182	12.442	8.290	0.104	0.937	0.420	0.268
0.10	33.704	19.000	15.483	11.147	14.368	2.667	1.244	1.082	0.761	0.243
0.25	29.780	14.208	27.064	8.659	13.837	2.764	1.493	0.954	0.483	0.328
0.50	22.220	11.248	36.267	6.145	13.905	3.145	2.787	0.746	0.384	0.251
0.75	21.483	9.678	42.145	5.673	13.818	2.041	4.289	0.712	0.309	0.296
1.00	17.628	8.817	43.561	4.675	13.203	2.610	4.546	0.479	0.300	0.298
1.25	17.569	8.787	45.121	4.467	13.867	2.898	5.178	0.576	0.273	0.305
1.50	15.498	6.852	49.069	4.144	14.052	3.466	5.678	0.518	0.257	0.324

**Table S4.** Chemical Element of C-IAD with Different Aging Temperatures (% by Weight)

Aging temperatures	Element Conc. (%)										
	O	Fe	As	Si	Al	S	Na	Ca	P	Ti	K
25°C	44.466	14.963	4.609	18.390	7.155	4.554	1.941	2.845	0.275	0.147	0.202
50°C	44.058	15.011	4.475	17.778	7.107	3.975	1.331	3.518	0.260	0.186	0.200
75°C	44.133	15.018	4.462	17.466	7.229	4.140	1.273	3.357	0.252	0.160	0.227
100°C	44.037	15.026	5.054	19.700	7.313	3.075	1.514	3.066	0.311	0.185	0.246
125°C	44.019	14.509	4.332	18.364	6.967	3.611	1.417	3.544	0.257	0.231	0.209
150°C	44.192	15.098	4.557	18.998	7.303	3.697	1.510	3.847	0.254	0.158	0.249
175°C	44.117	15.032	4.199	18.840	7.196	3.179	0.741	3.683	0.270	0.142	0.258

**Table S5.** Chemical Composition of C-IAD with Different Aging Temperatures (% by Weight)

Aging temperatures	Compound Conc. (%)									
	Fe <sub>2</sub> O <sub>3</sub>	SO <sub>3</sub>	SiO <sub>2</sub>	As <sub>2</sub> O <sub>3</sub>	Al <sub>2</sub> O <sub>3</sub>	Na <sub>2</sub> O	CaO	P <sub>2</sub> O <sub>5</sub>	TiO <sub>2</sub>	K <sub>2</sub> O
25°C	21.393	11.372	39.343	6.086	13.519	3.617	3.980	0.630	0.245	0.244
50°C	21.462	9.926	38.033	5.908	13.429	1.794	4.922	0.595	0.310	0.240
75°C	21.471	10.337	37.366	5.892	13.658	1.716	4.698	0.577	0.267	0.273
100°C	21.483	7.678	42.145	6.673	13.818	2.041	4.289	0.712	0.309	0.296
125°C	20.744	9.017	39.286	5.720	13.163	1.911	4.959	0.590	0.385	0.252
150°C	21.586	9.232	40.643	6.017	13.798	2.035	5.382	0.582	0.264	0.300
175°C	21.492	7.939	40.305	5.544	13.596	0.999	5.154	0.619	0.236	0.311