Table 1: Adsorption data obtained from TCAA-imprinted and non-imprinted polymers obtained by two different polymerization methods.

Imprinting method / Substrate	BP			MSP		
	MIP	nonMIP	CR (%)	MIP	nonMIP	CR (%)
Halo acids —						
Trichloroacetic acid (TCAA)	10.44	0.83	-	13.07	1.02	-
Dichloroacetic acid (DCAA)	10.12	0.52	97	13.01	0.20	99
Monochloroacetic acid (MCAA)	10.02	2.21	96	11.48	<0.01	88
Tribomoacetic acid (TBAA)	0.70	0.33	7	1.13	0.60	3
Dibromoacetic acid (DBAA)	7.41	1.93	71	12.48	2.19	95
Monobromoacetic acid (MBAA)	1.24	0.41	12	8.58	1.45	66
Non-halo acids —						
Acetic acid	2.48	2.24	24	2.89	2.75	22
Oxalic acid	1.35	1.18	13	1.50	1.30	11
Citric acid	1.06	0.96	10	1.15	1.16	9

BP = bulk polymerization method; MSP = multi-step swelling polymerization method.

The adsorption value is expressed as microgram of substrate adsorbed per g polymer.

CR (%), cross-reactivity is obtained from the adsorption value of MIP for the analog compared with that for the TCAA.

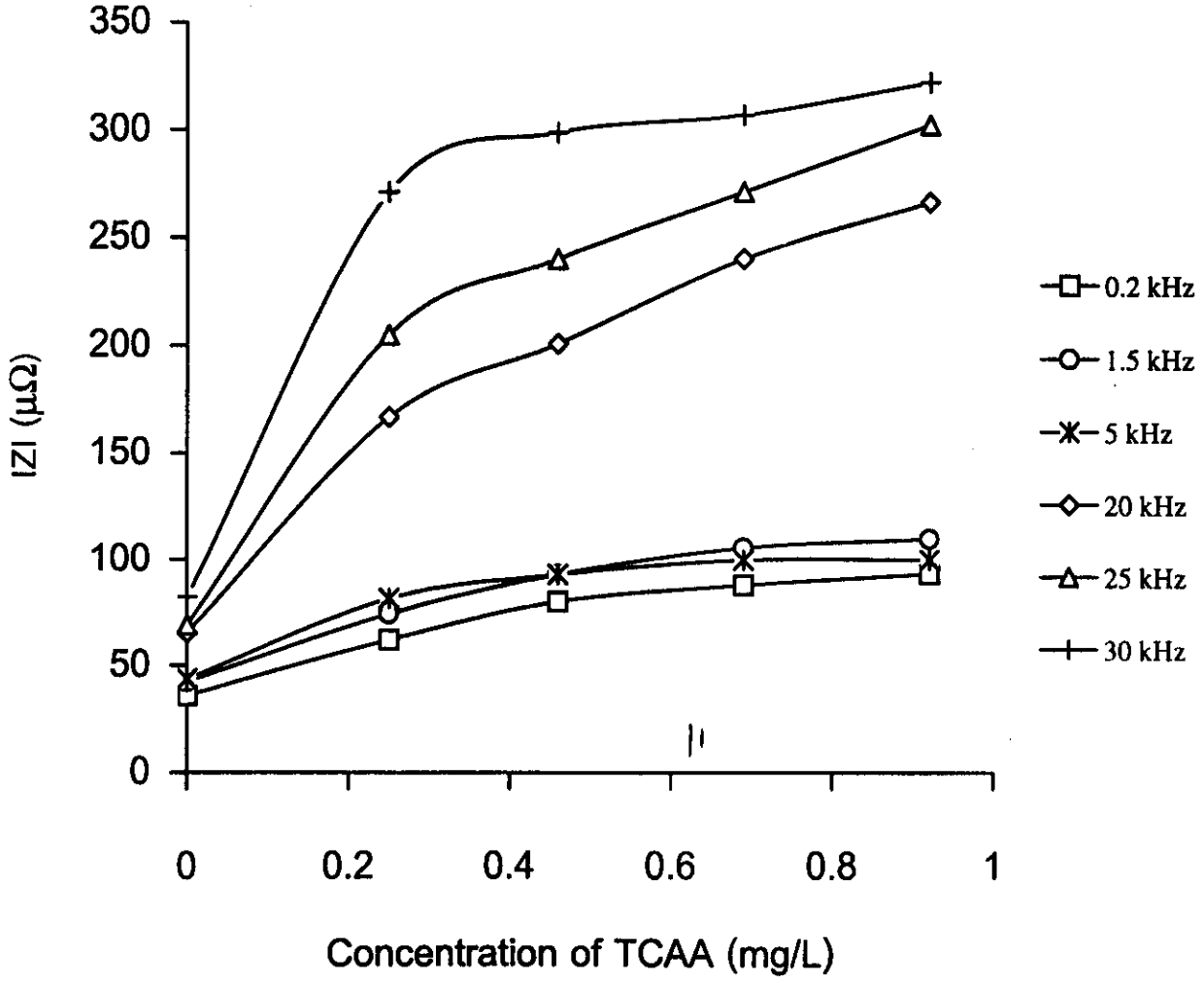

Figure 1: Effect of the A.C. frequency on the impedance responses of the MIP sensor at various concentrations of TCAA. Measurements were carried out in 0.1 M potassium phosphate buffer, containing 35 mM sodium chloride.

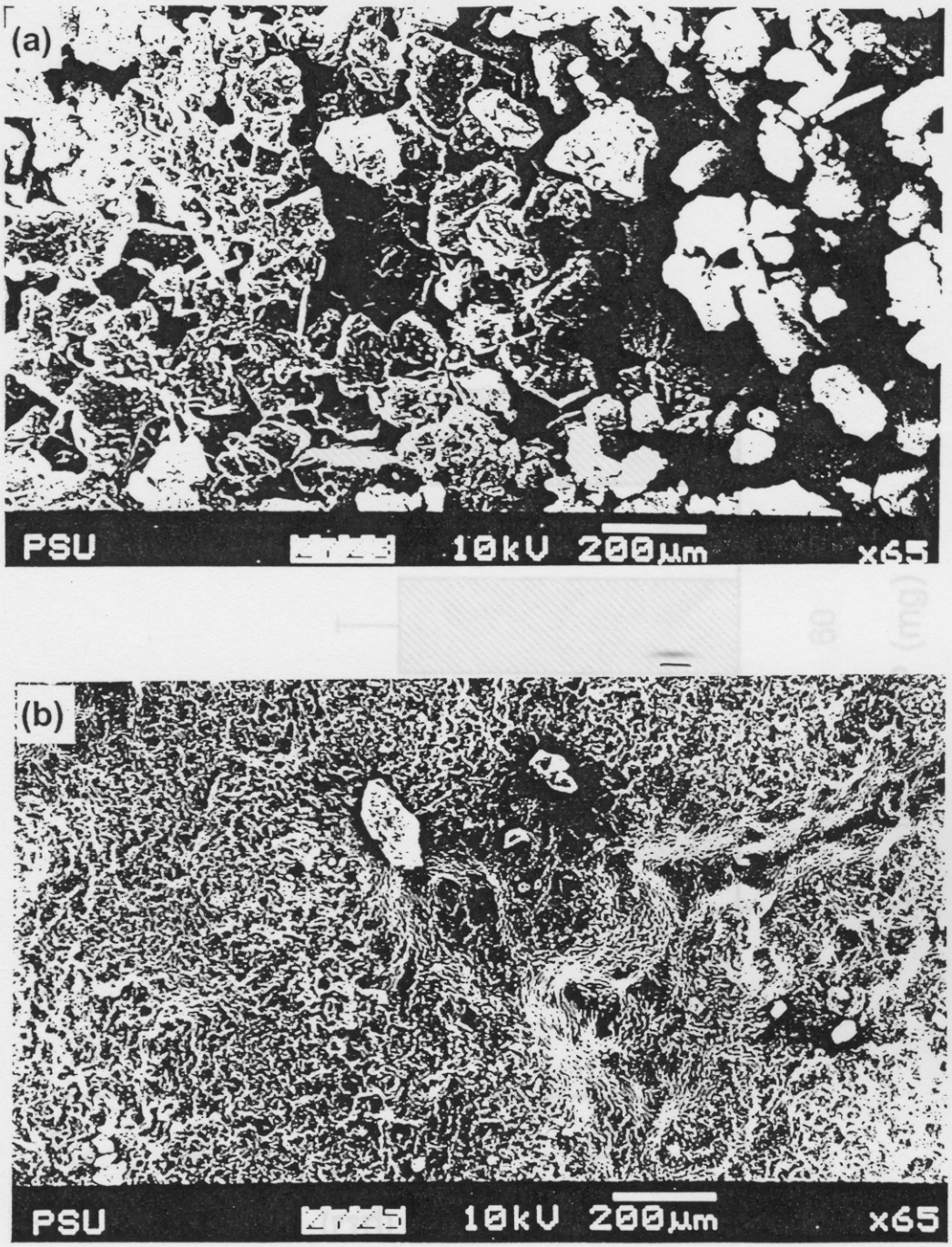

Figure 2: Scanning electron micrograph of the immobilised membrane prepared using : (a) 12 ml, (b) 6 ml casting solvent.

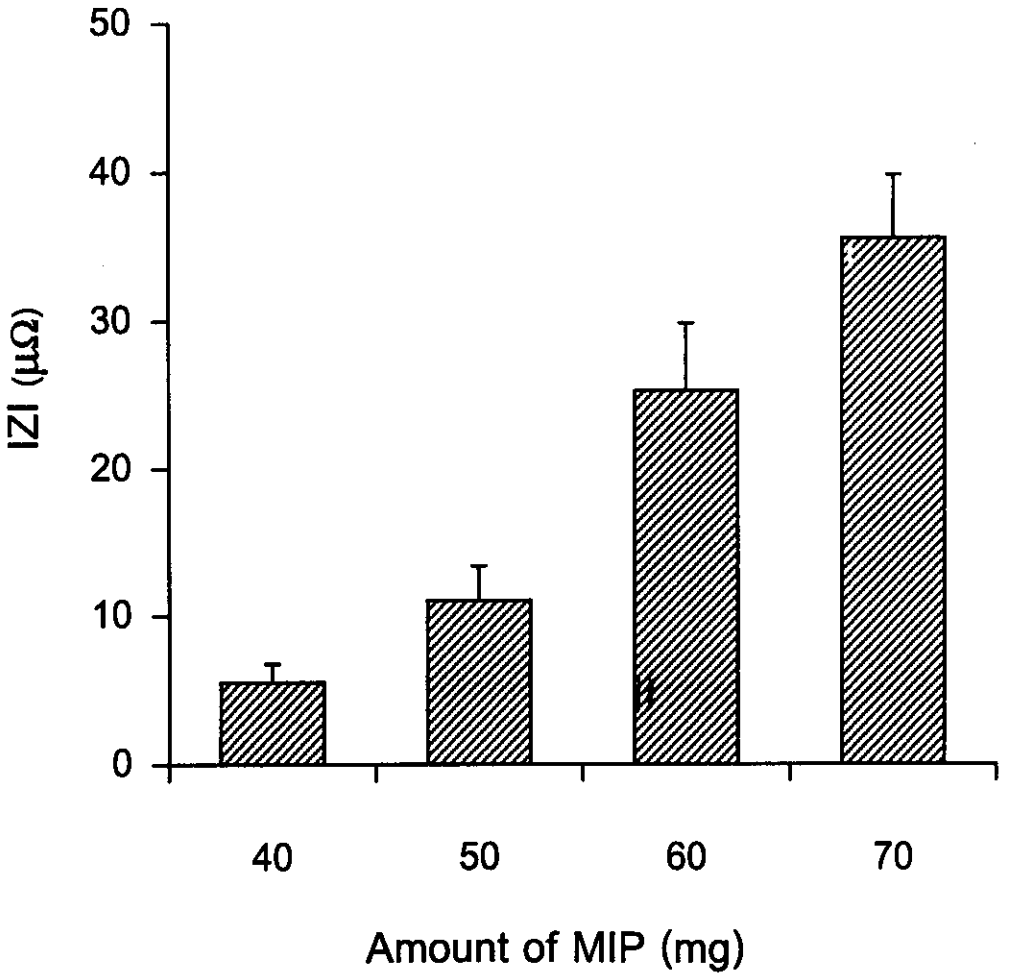

Figure 3: Effect of the amount of BP-based MIP on the sensor response upon 1.20 μg ml^{-1} TCAA. Each value represents the average of three independent measurements. Measurements were carried out in 0.1 M potassium phosphate buffer, containing 35 mM sodium chloride.

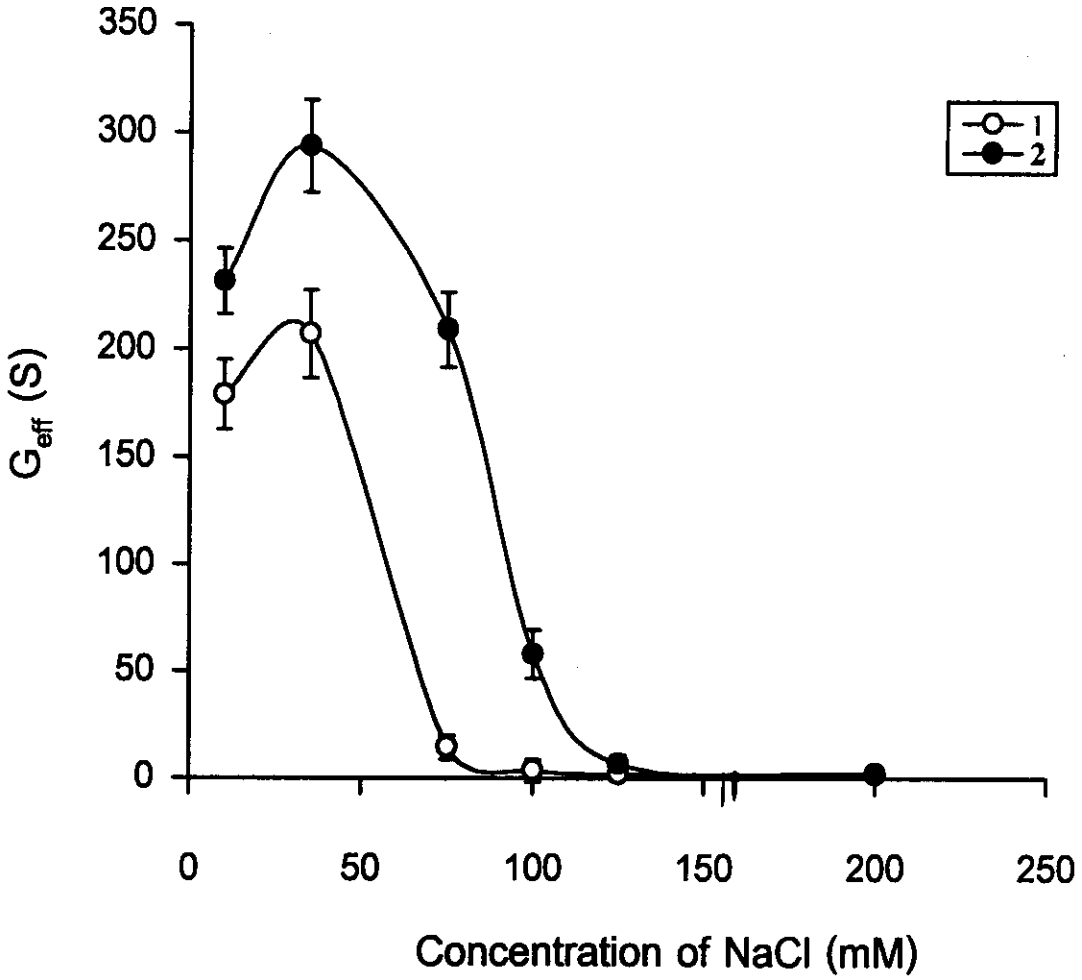

Figure 4: Effect of NaCl concentration on the sensor response upon 1.20 μg ml^{-1} of TCAA for: (1) MIP sensor, (2) reference sensor. Each value represents the average of three independent measurements. Measurements were carried out in 0.1 M potassium phosphate buffer.

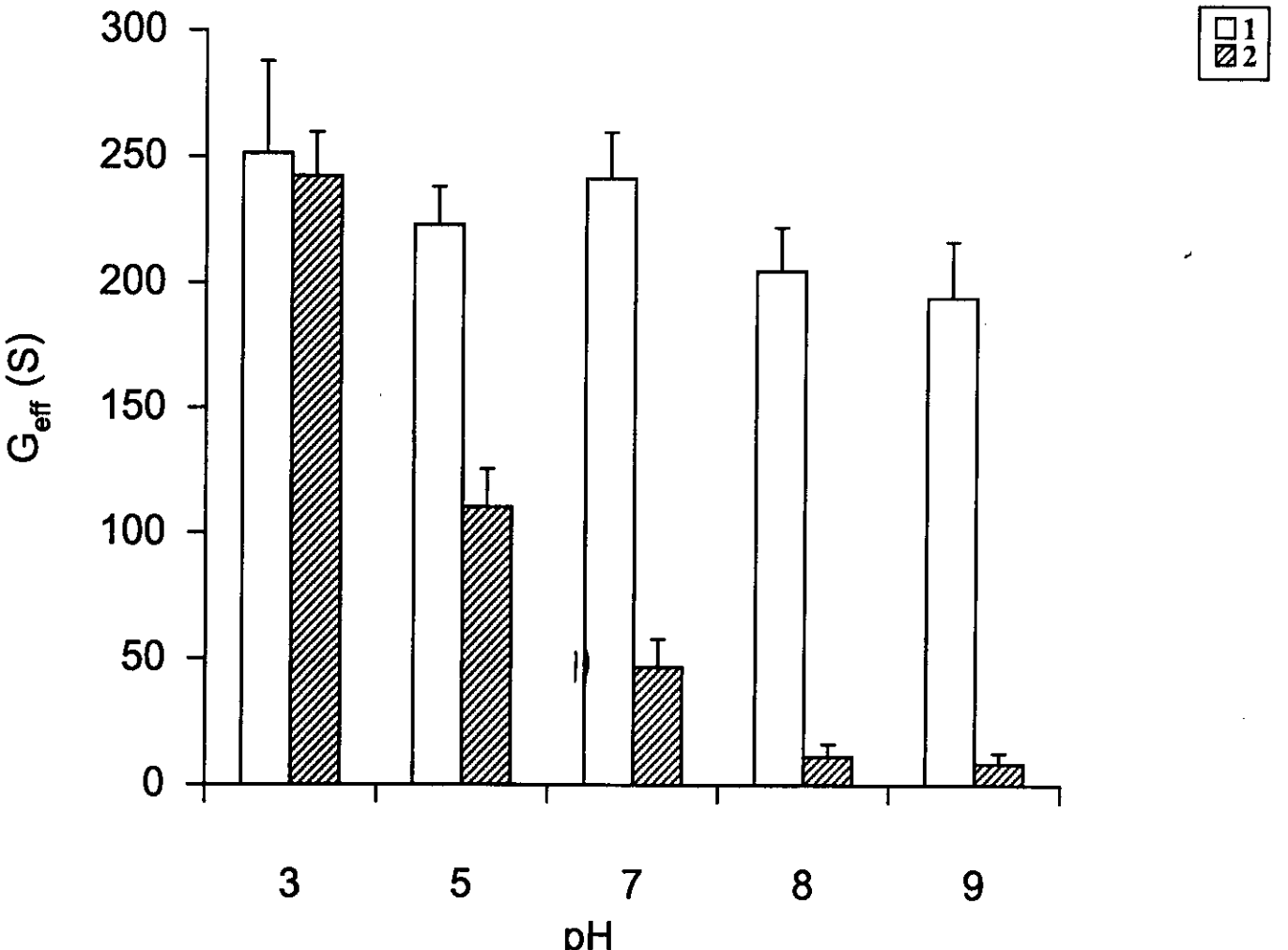

Figure 5: Effect of pH on the sensor response upon 1.20 µg ml^{-1} of TCAA for : (1) reference sensor, (2) MIP sensor. Each value represents the average of three independent measurements. Measurements were carried out in 0.1 M potassium phosphate buffer, containing 35 mM sodium chloride.

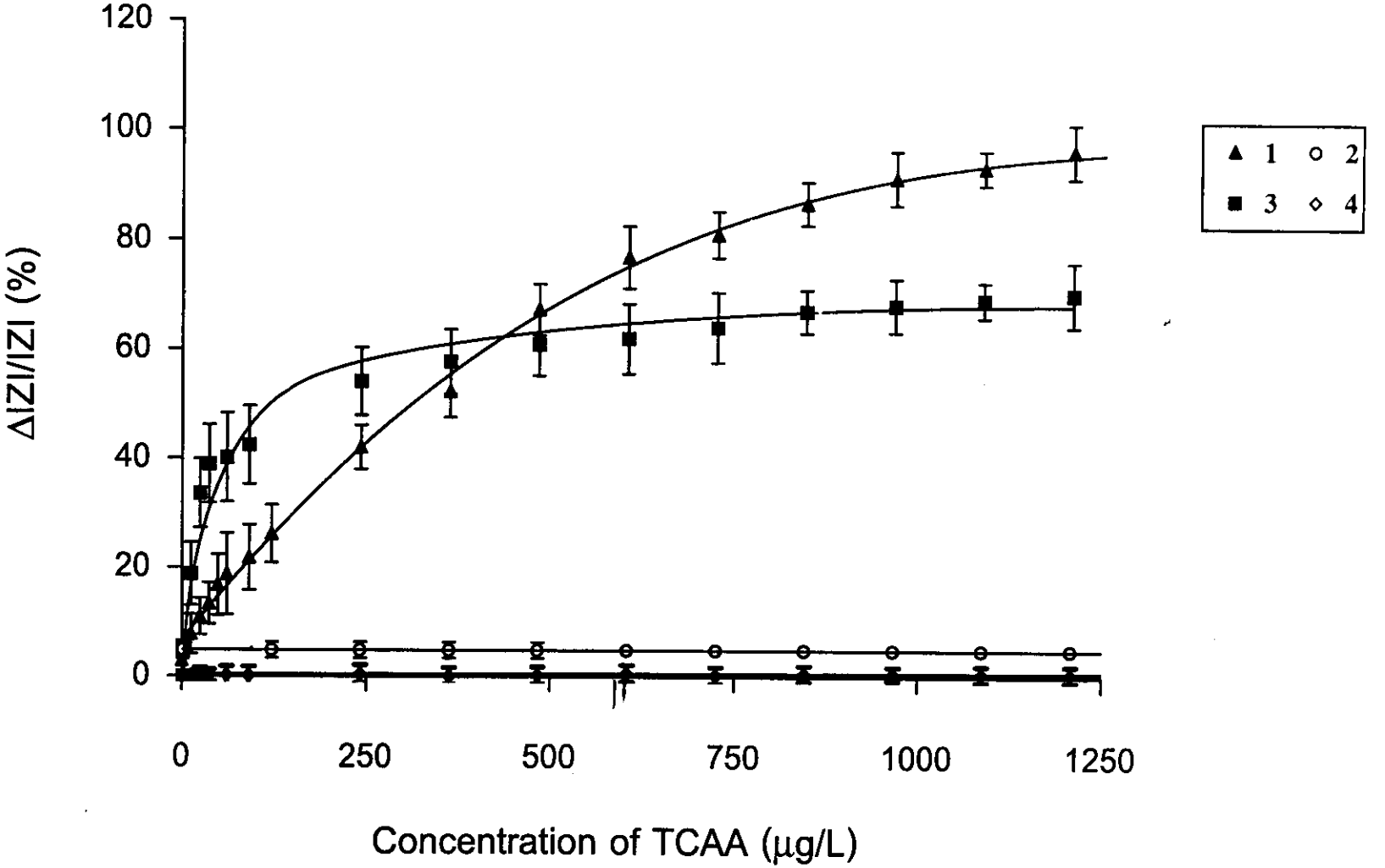

Figure 6: Concentration dependence of the impedance response to HAAs for sensor incorporated with : (1) BP-based MIP, (2) BP-based nonMIP, (3) MSP-based MIP, (4) MSP-based nonMIP. Each point represents the average of six independent measurements. Measurements were carried out in 0.1 M potassium phosphate buffer pH 7, containing 35 mM sodium chloride.

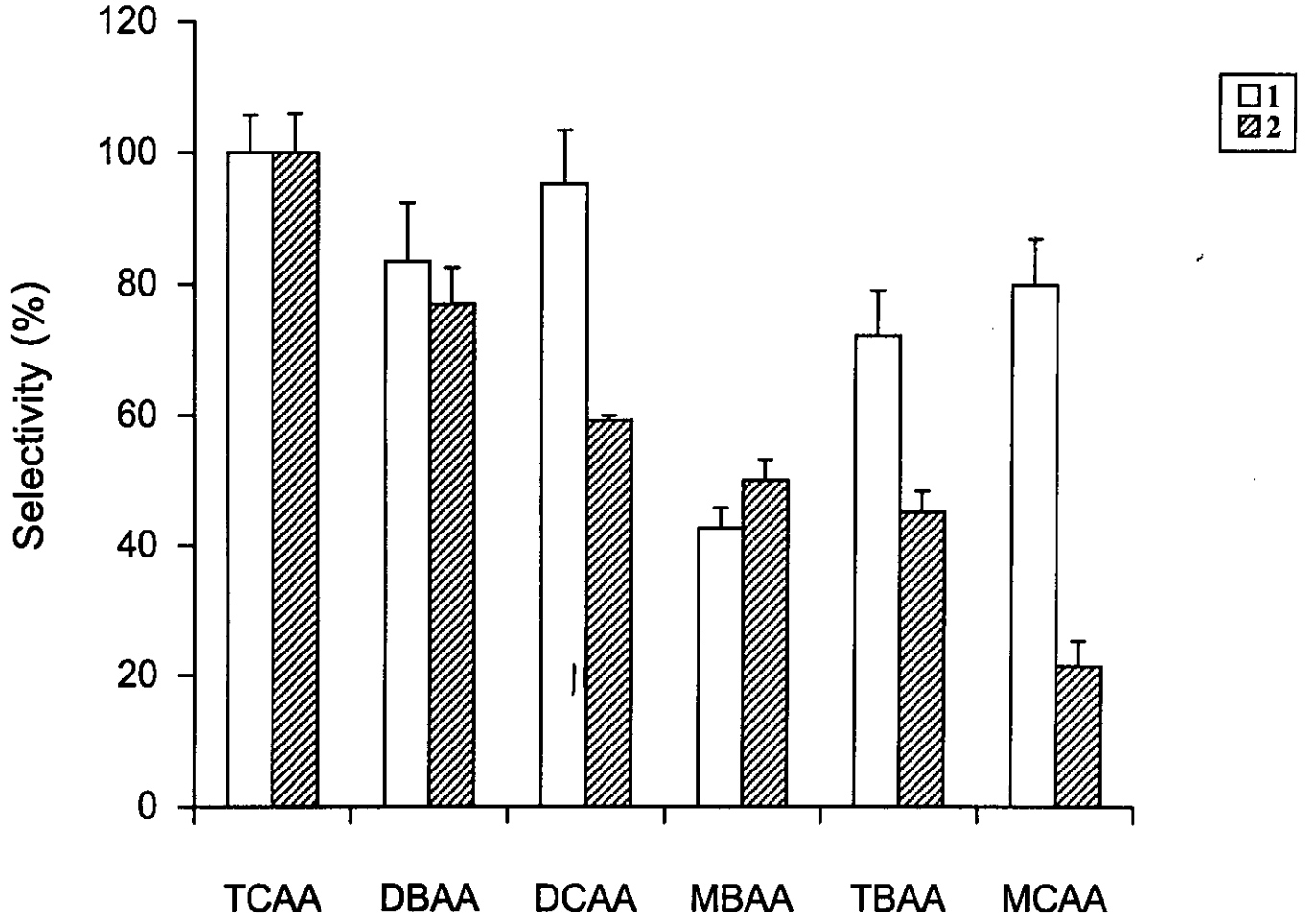

Figure 7: Selectivity of (1) sensor modified with MSP-based MIP and (2) sensor modified with BP-based MIP for six HAAs at a concentration giving IC_{50}. Note that IC_{50} designates the polymer content at which 50% of the polymer is blocked by the analyte. Each value represents the average of three independent measurements for all HAAs except TCAA that the average of six independent measurements was shown.

Table 2: Calibration data obtained for the analysis of six HAAs by a sensor containing with MSP-based MIP.

compound	slope	intercept	working range ($\mu g\ l^{-1}$)	R^2	LOD ($\mu g\ l^{-1}$)
TCAA	0.198	0.296	25-1000	0.986	1.0
DCAA	0.254	0.254	40-1000	0.991	4.2
MCAA	0.241	0.241	10-660	0.980	4.2
TBAA	0.286	0.286	5-250	0.978	0.2
DBAA	0.336	0.336	15-150	0.983	0.5
MBAA	0.309	0.309	20-250	0.976	5.0

Table 3: Recovery data for the sensor method and the LLE-GC-ECD method.

Analyte	Spike	Sensor method		LLE-GC-ECD method	
	($\mu g\ l^{-1}$)	%Recovery *	%RSD	%Recovery *	%RSD
TCAA	30	105.95	2.26	81.46	12.39
TCAA	60	101.52	0.1	99.58	12.26
TCAA	90	101.09	0.45	103.45	4.66
Sum 6 HAAs	5 each	107.85	4.92	60.53	3.04
Sum 6 HAAs	10 each	103.85	0.47	84.74	2.84
Sum 6 HAAs	15 each	102.88	1.61	95.69	2.56

Sum 6 HAAs refer to the mixture of TCAA, DCAA, MCAA, TBAA, DBAA and MBAA altogether.
* mean value (n = 3).