

# Pore-scale Modeling of Nucleation and Growth in Porous Media

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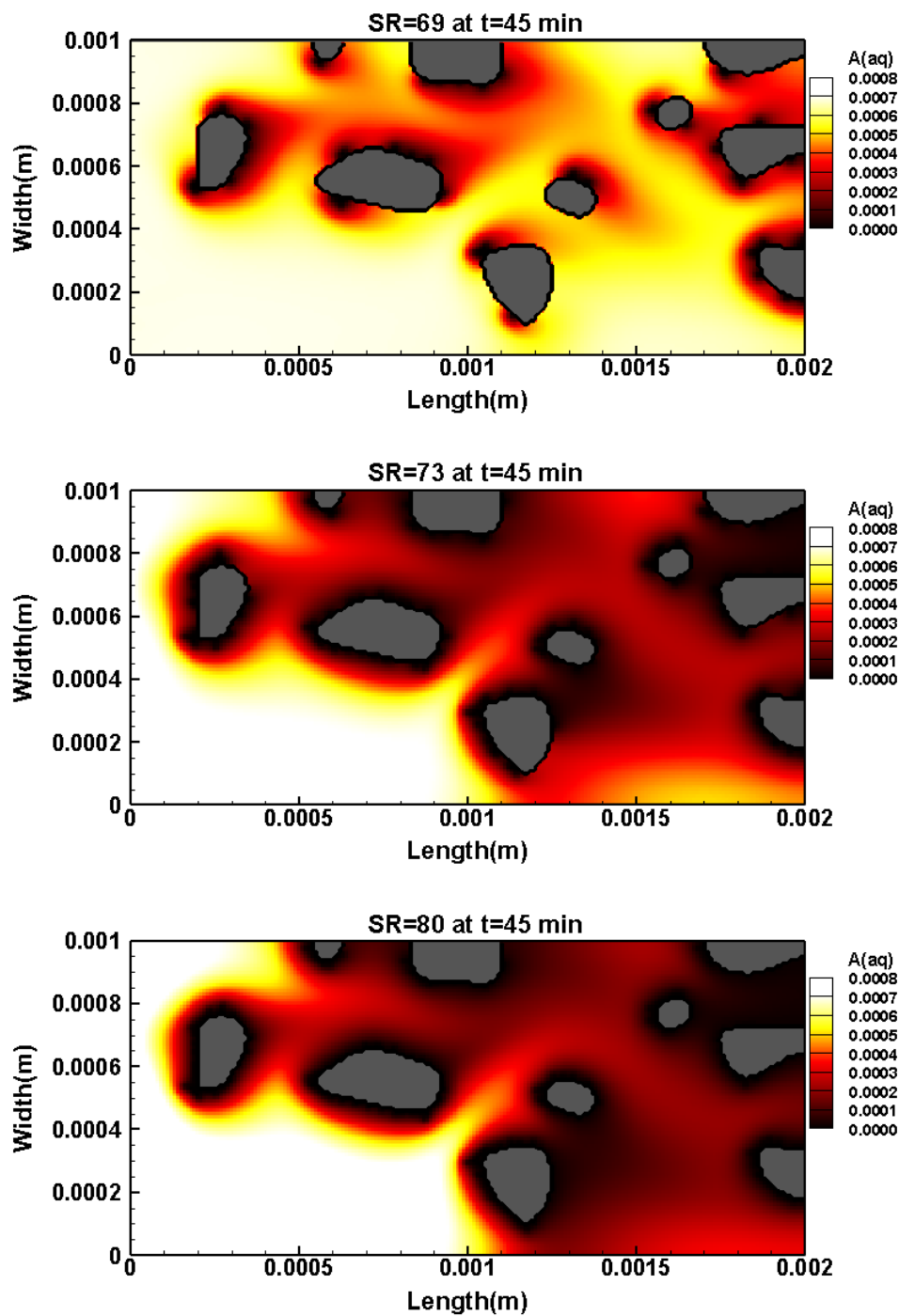
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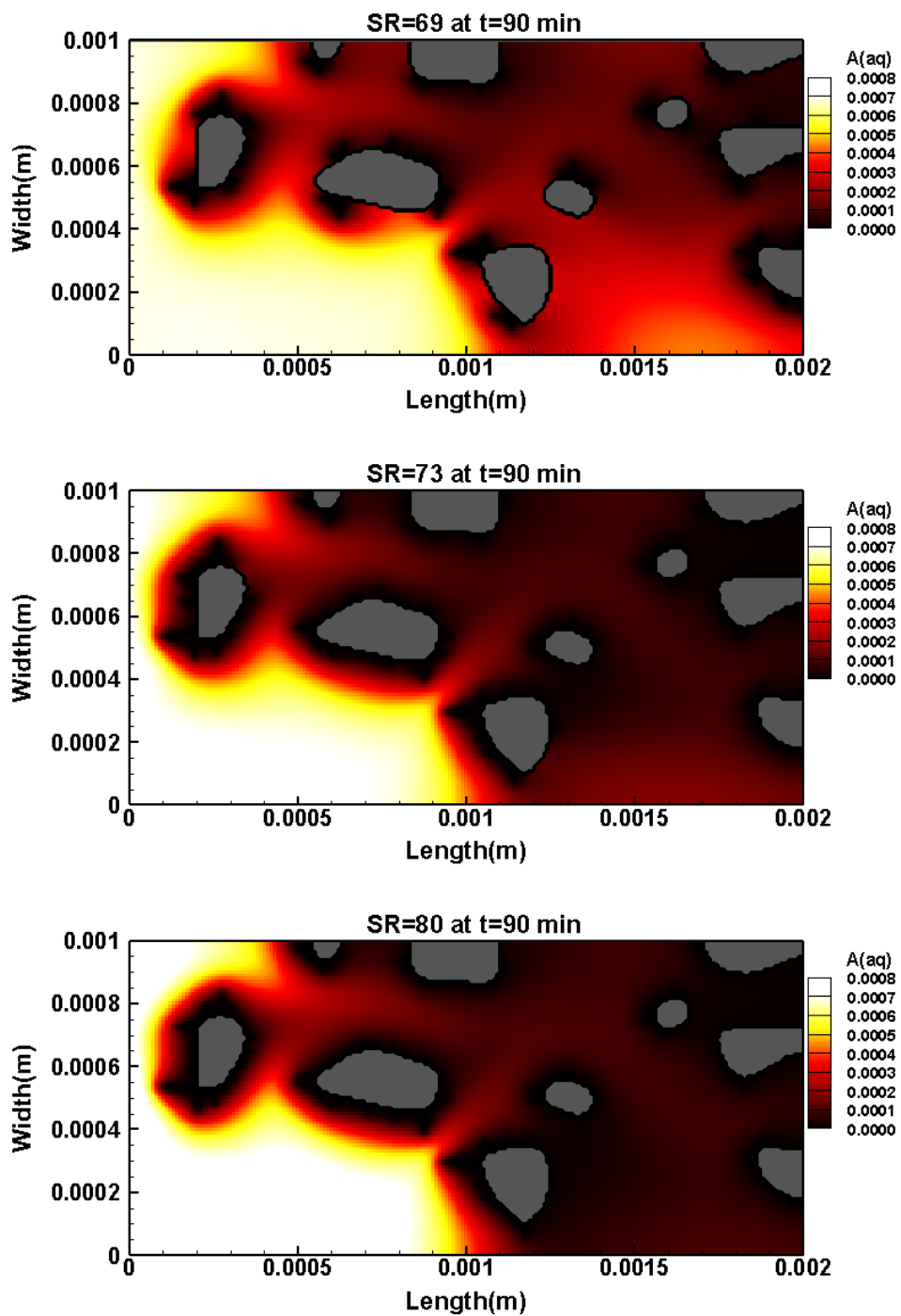
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**Table S1. Concentrations used for the initial and inlet solutions**

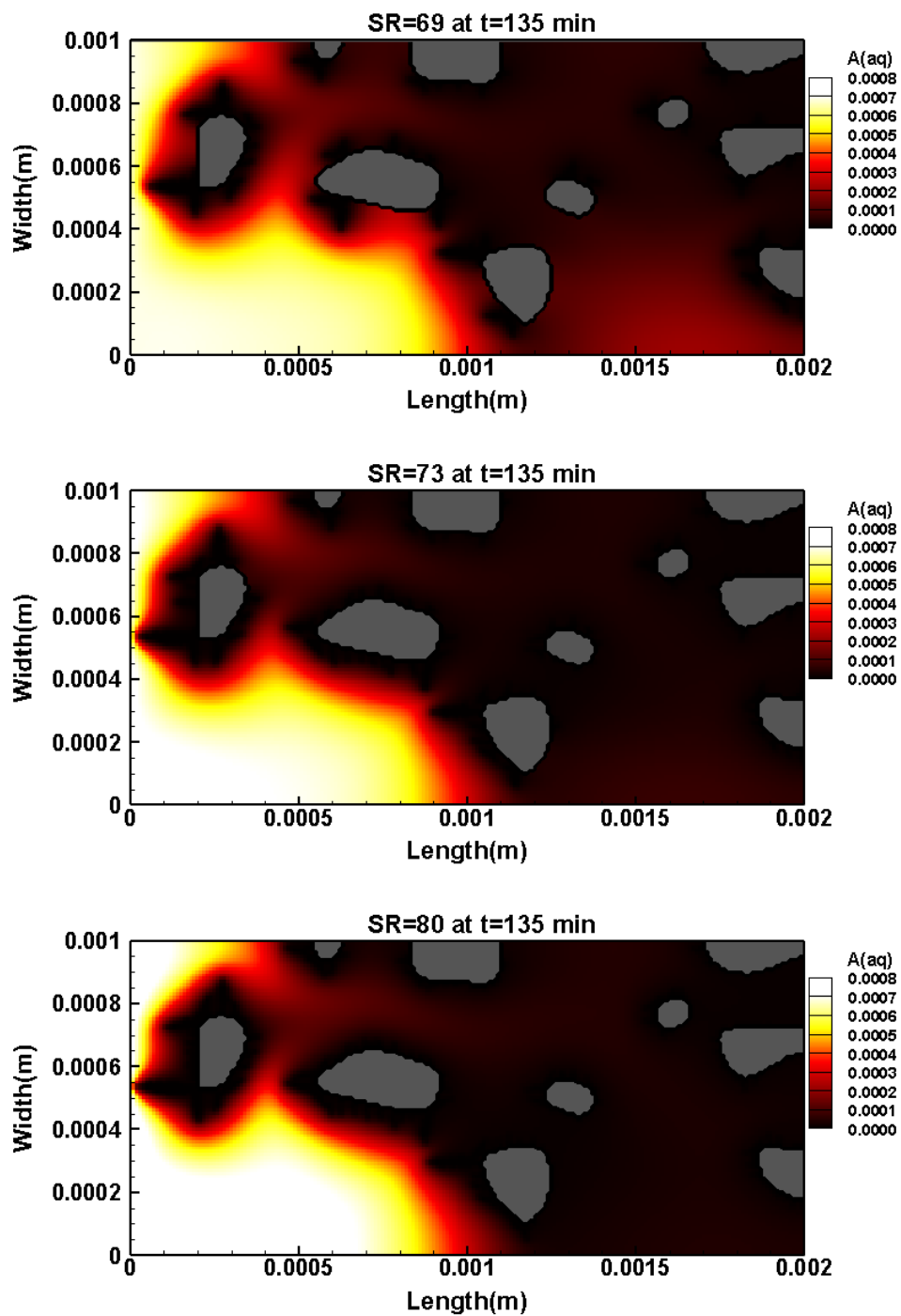
Solutions	pH	Ca [mol.L <sup>-1</sup> ]	C [mol.L <sup>-1</sup> ]	Na[mol.L <sup>-1</sup> ]	Cl[mol.L <sup>-1</sup> ]
Solution with SI = 1.23	5.769	0.09306	0.6036	0.01	0.01
Solution with SI = 1.13	5.692	0.08953	0.6644	0.01	0.01



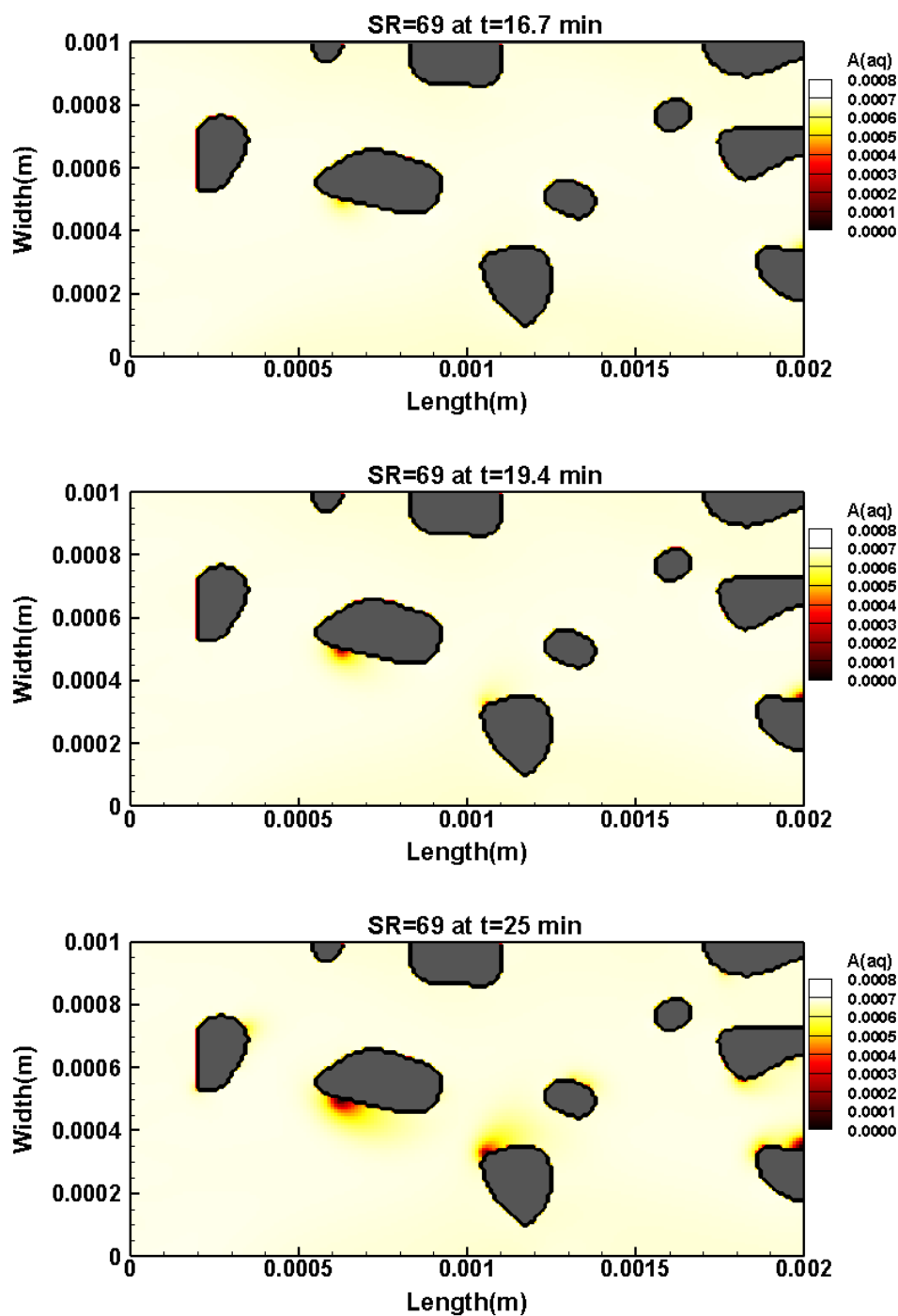
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**Figure S2.** The concentration profile of A(aq) in mol.L<sup>-1</sup> for  $\Omega = 69$ , 73, and 80 at  $t = 90$  minutes. The kinetic rate constant for this case is  $5 \times 10^{-5}$  [mol.m<sup>-2</sup>.s<sup>-1</sup>]. The initial average flow velocity is  $4.6 \times 10^{-7}$  [m.s<sup>-1</sup>] for this scenario.

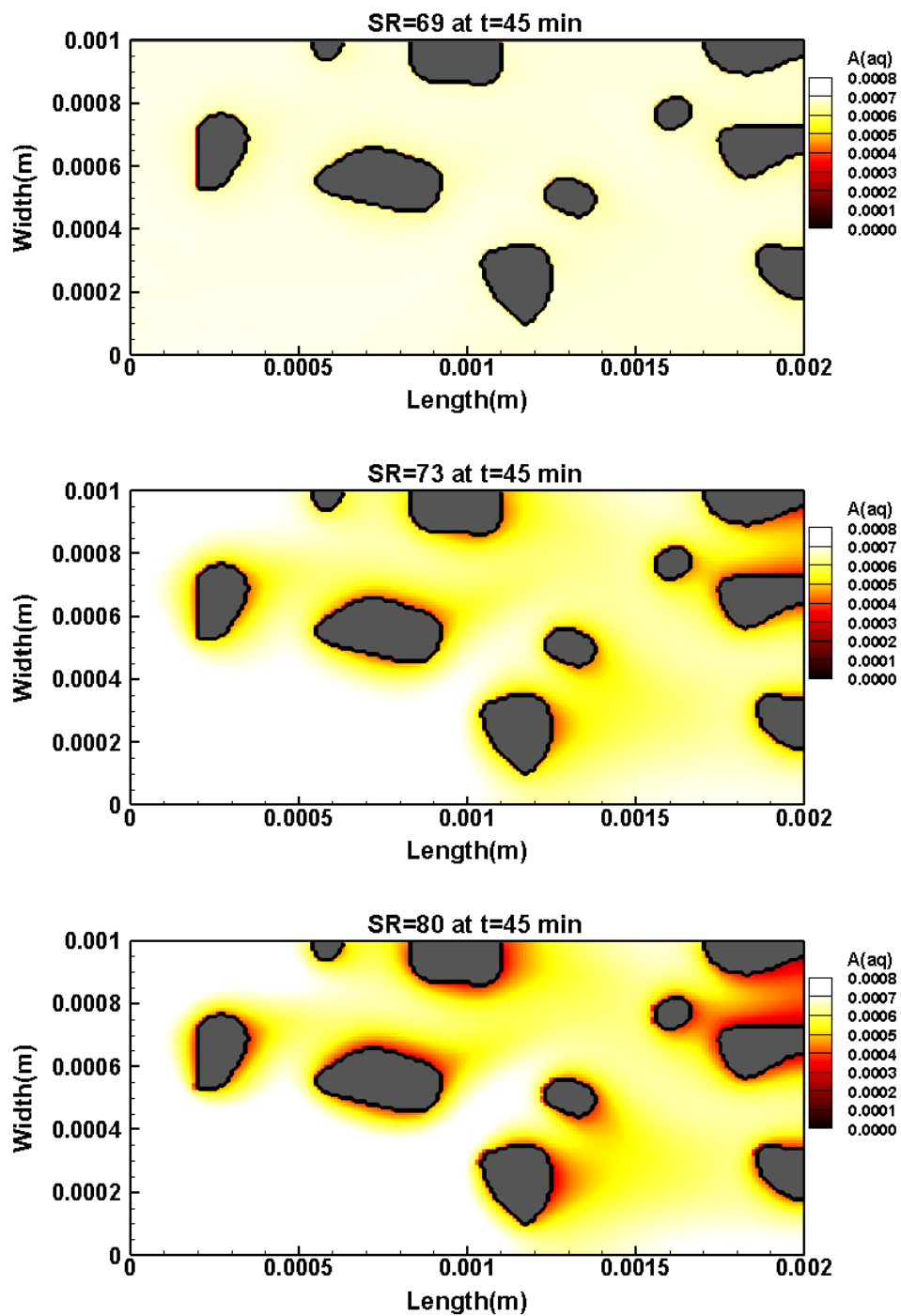


**Figure S3.** The concentration profile of  $A(aq)$  in  $\text{mol.L}^{-1}$  for  $\Omega = 69, 73,$  and  $80$  at  $t = 135$  minutes. The kinetic rate constant for this case is  $5 \times 10^{-5} [\text{mol.m}^{-2}.\text{s}^{-1}]$ . The initial average flow velocity is  $4.6 \times 10^{-7} [\text{m.s}^{-1}]$  for this scenario.



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**Figure S5.** The concentration profile of  $A(aq)$  in  $\text{mol.L}^{-1}$  for  $\Omega = 69, 73,$  and  $80$  at  $t = 45$  minutes. The kinetic rate constant for this case is  $5 \times 10^{-6} [\text{mol.m}^{-2}.\text{s}^{-1}]$ . The initial average flow velocity is  $4.6 \times 10^{-7} [\text{m.s}^{-1}]$  for this scenario.

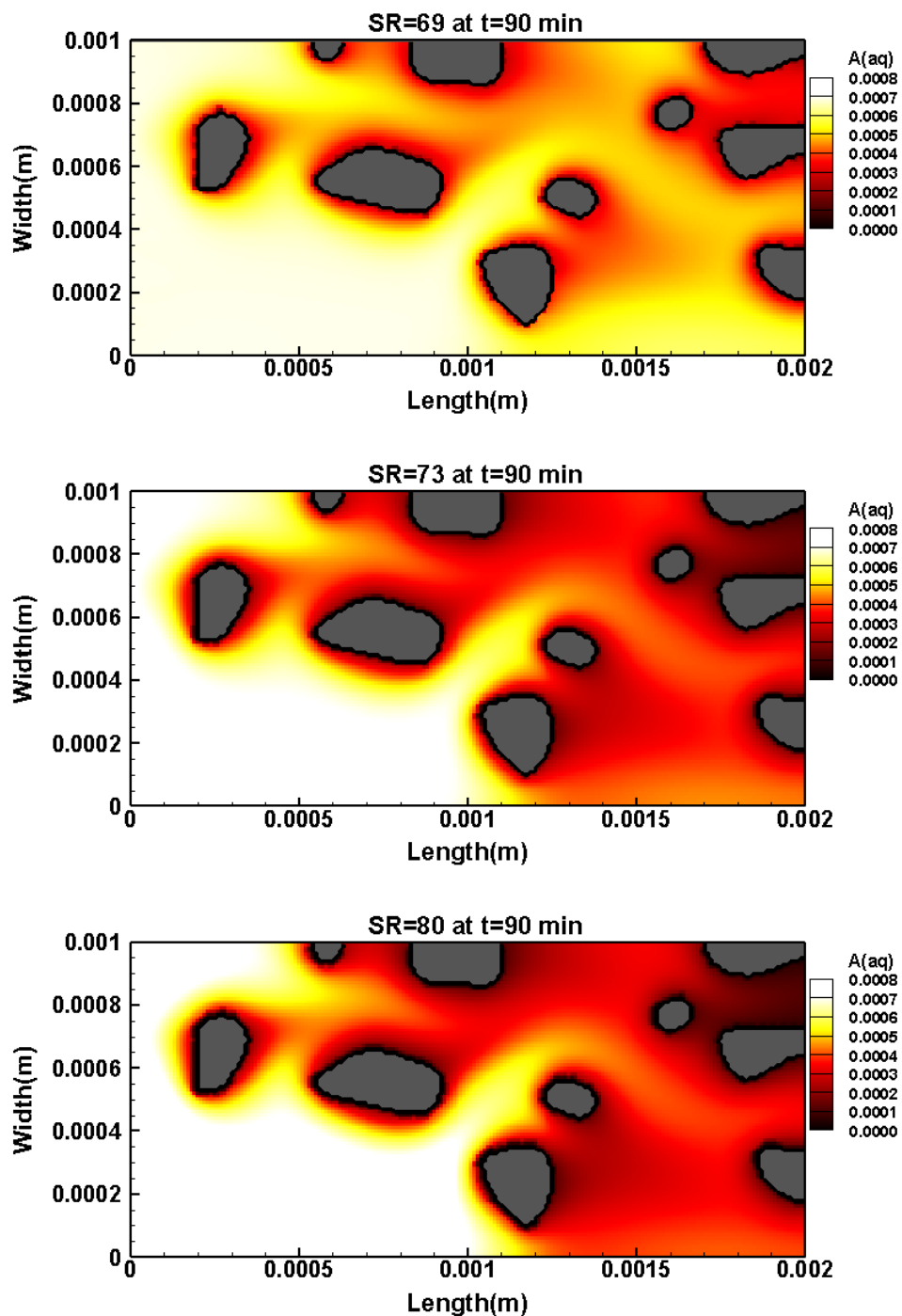
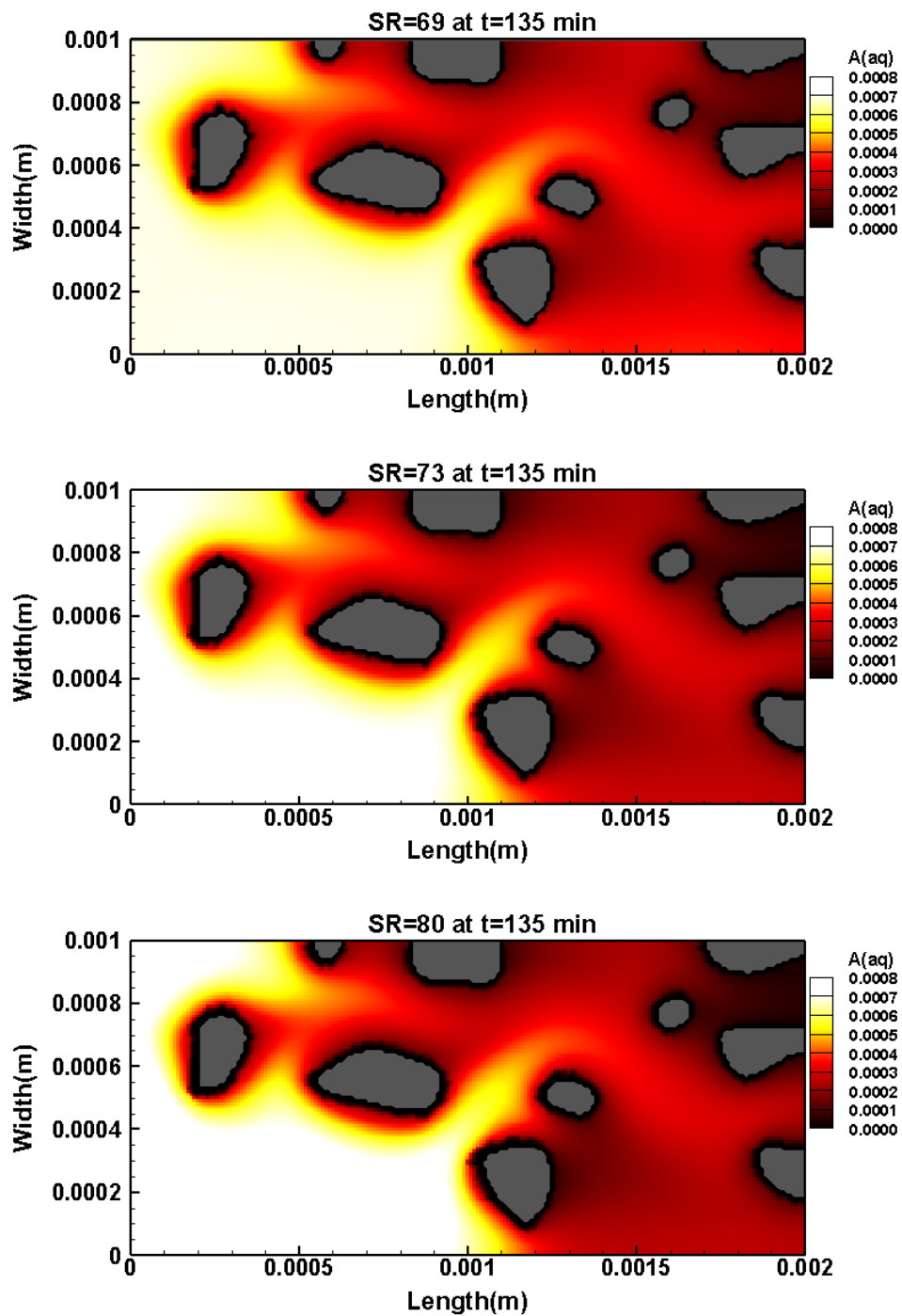


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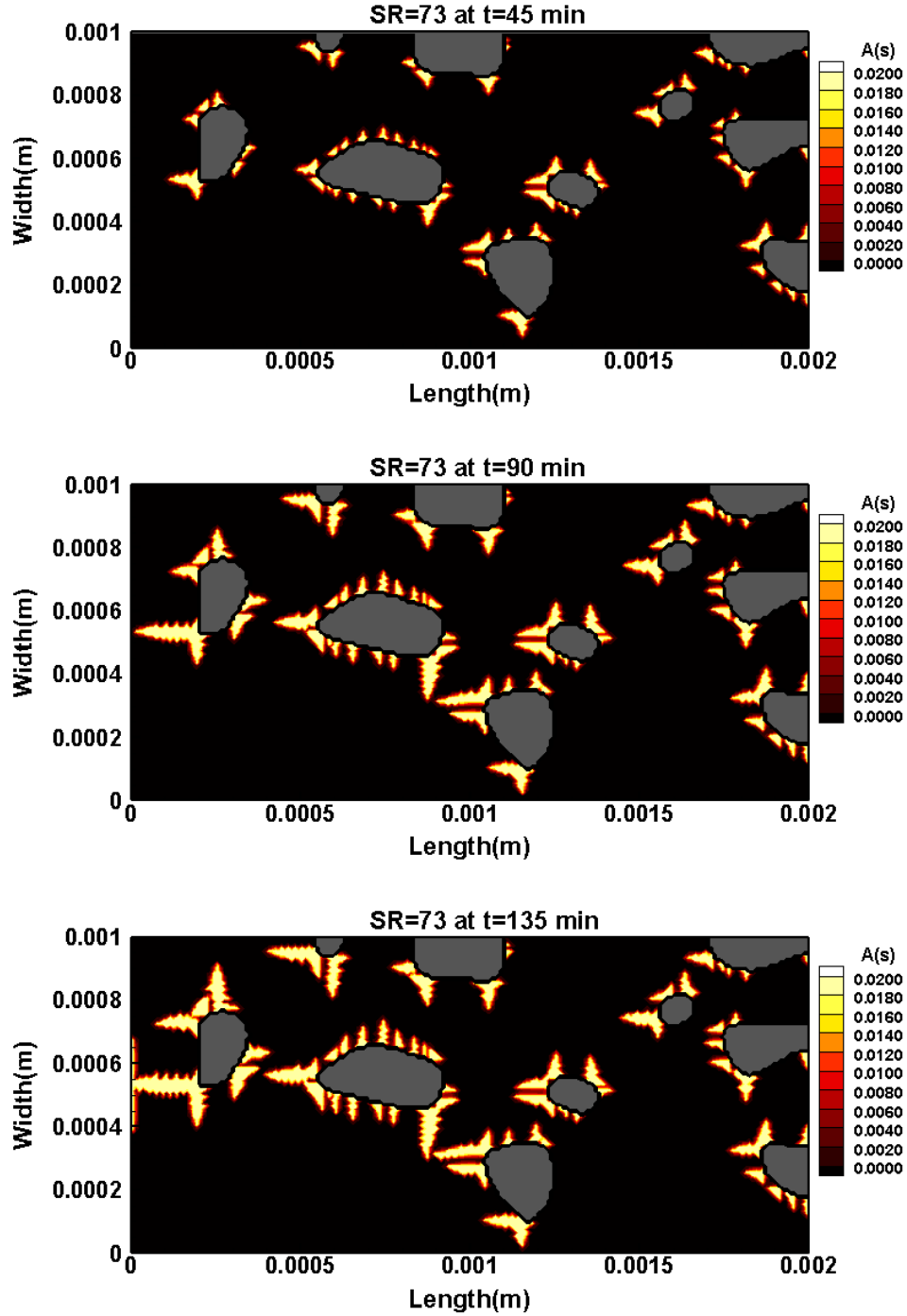


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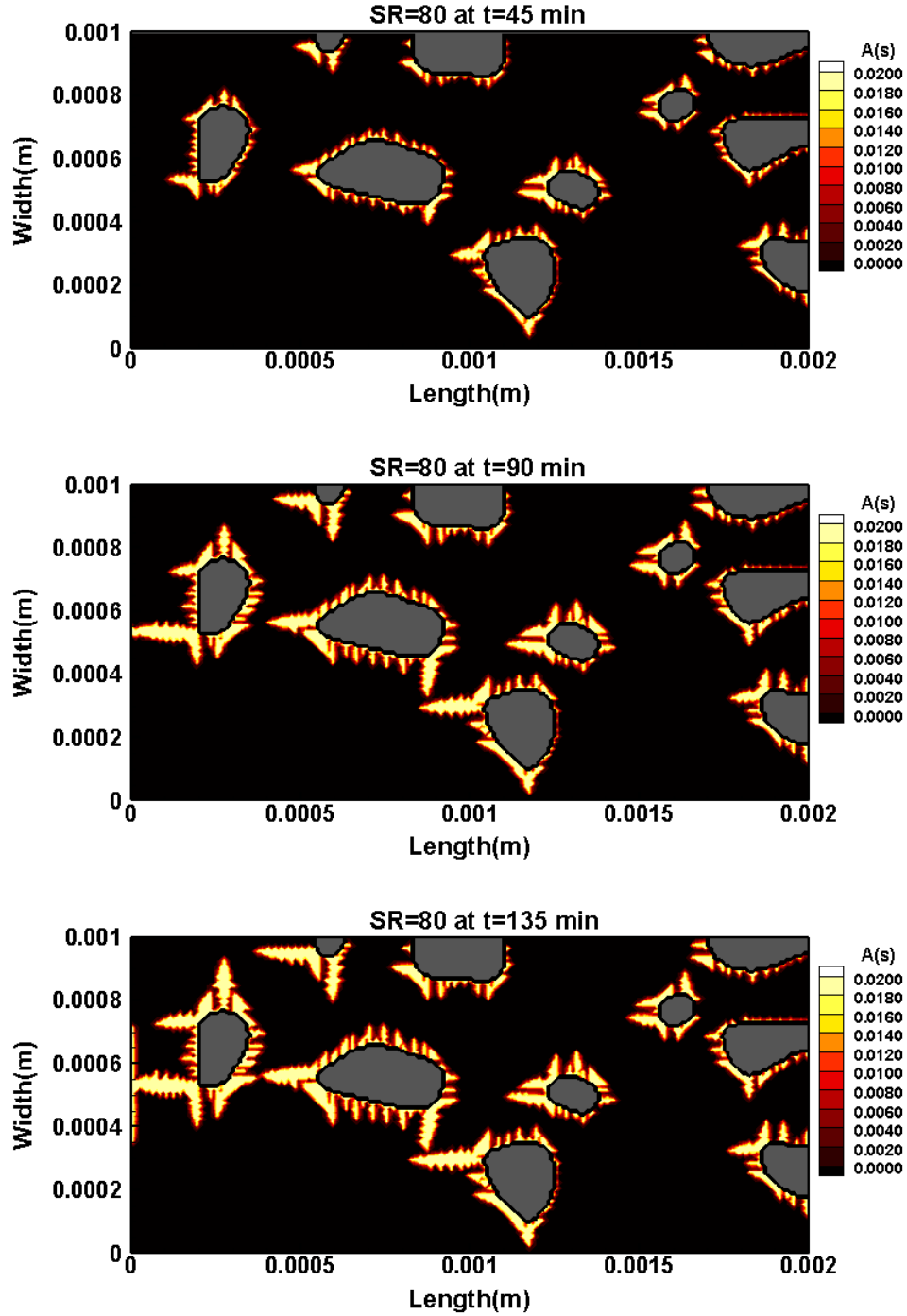
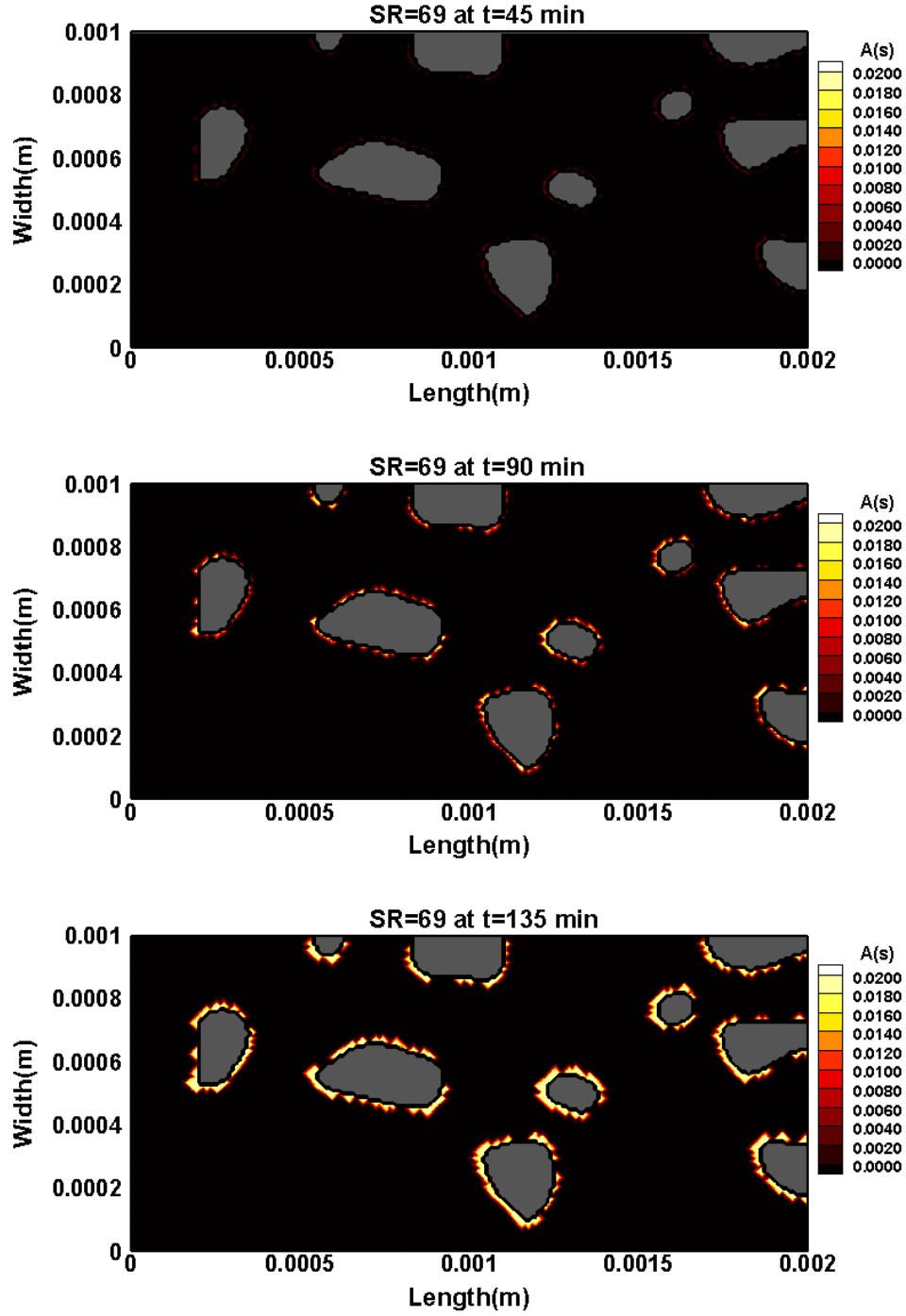
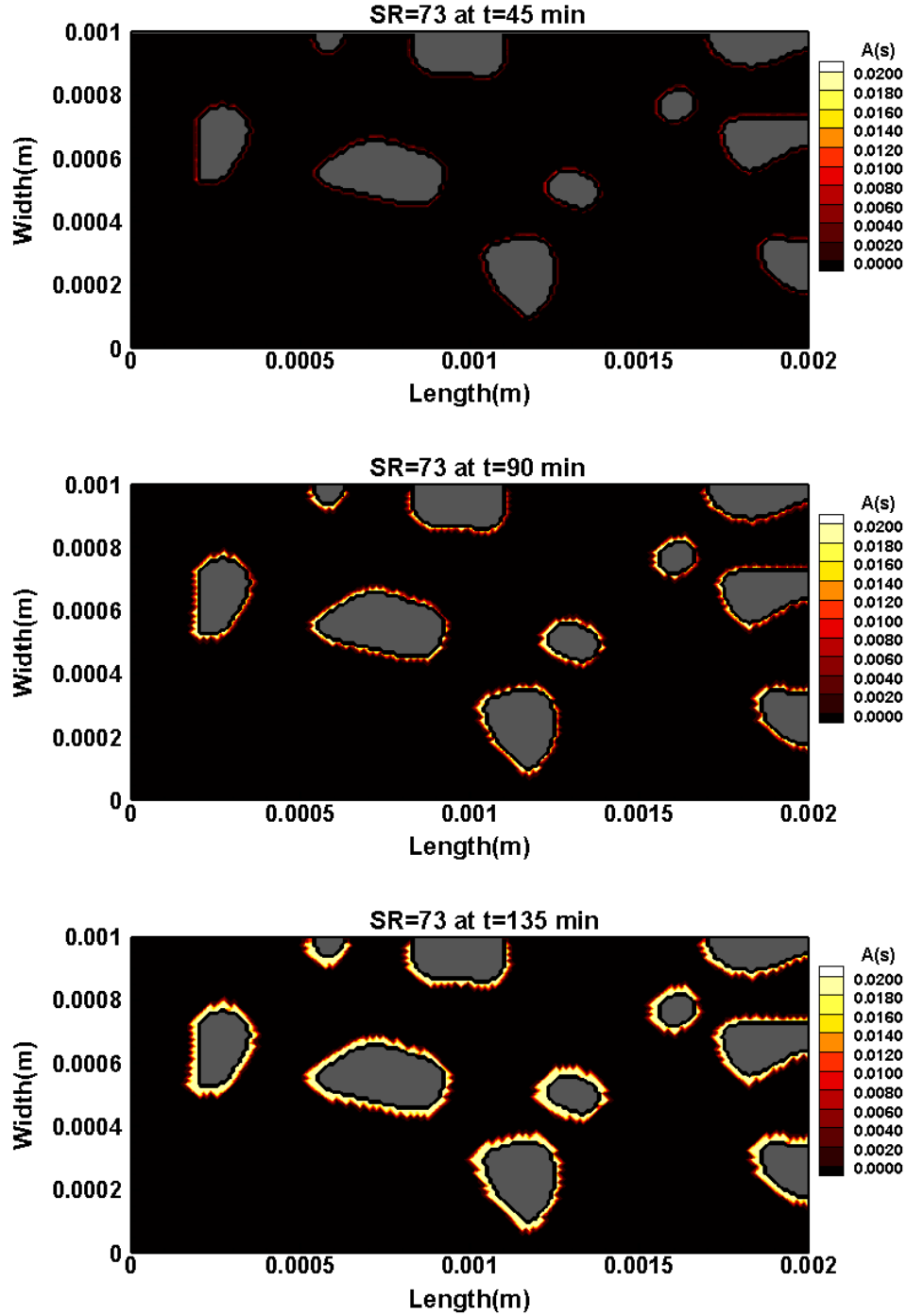


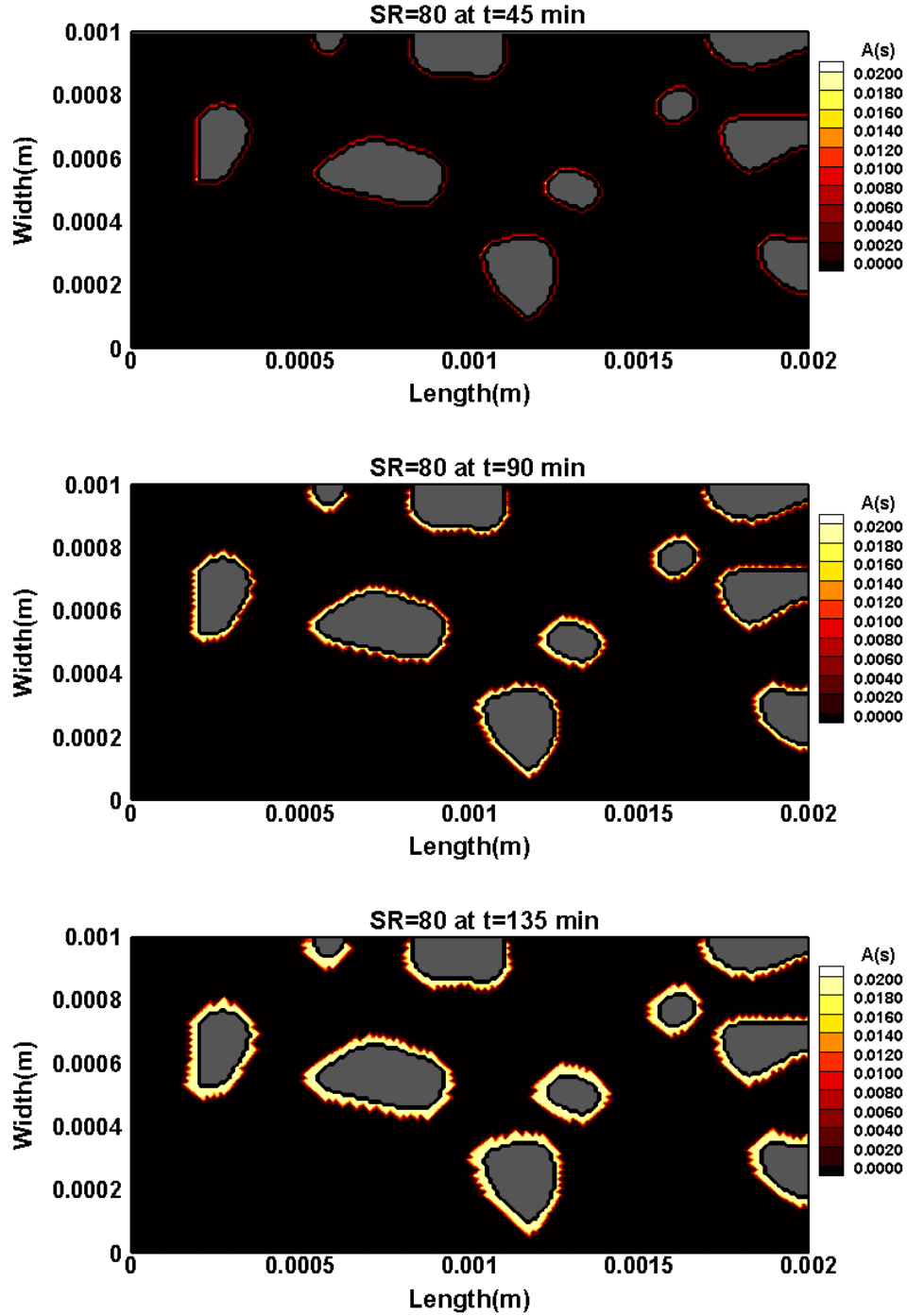
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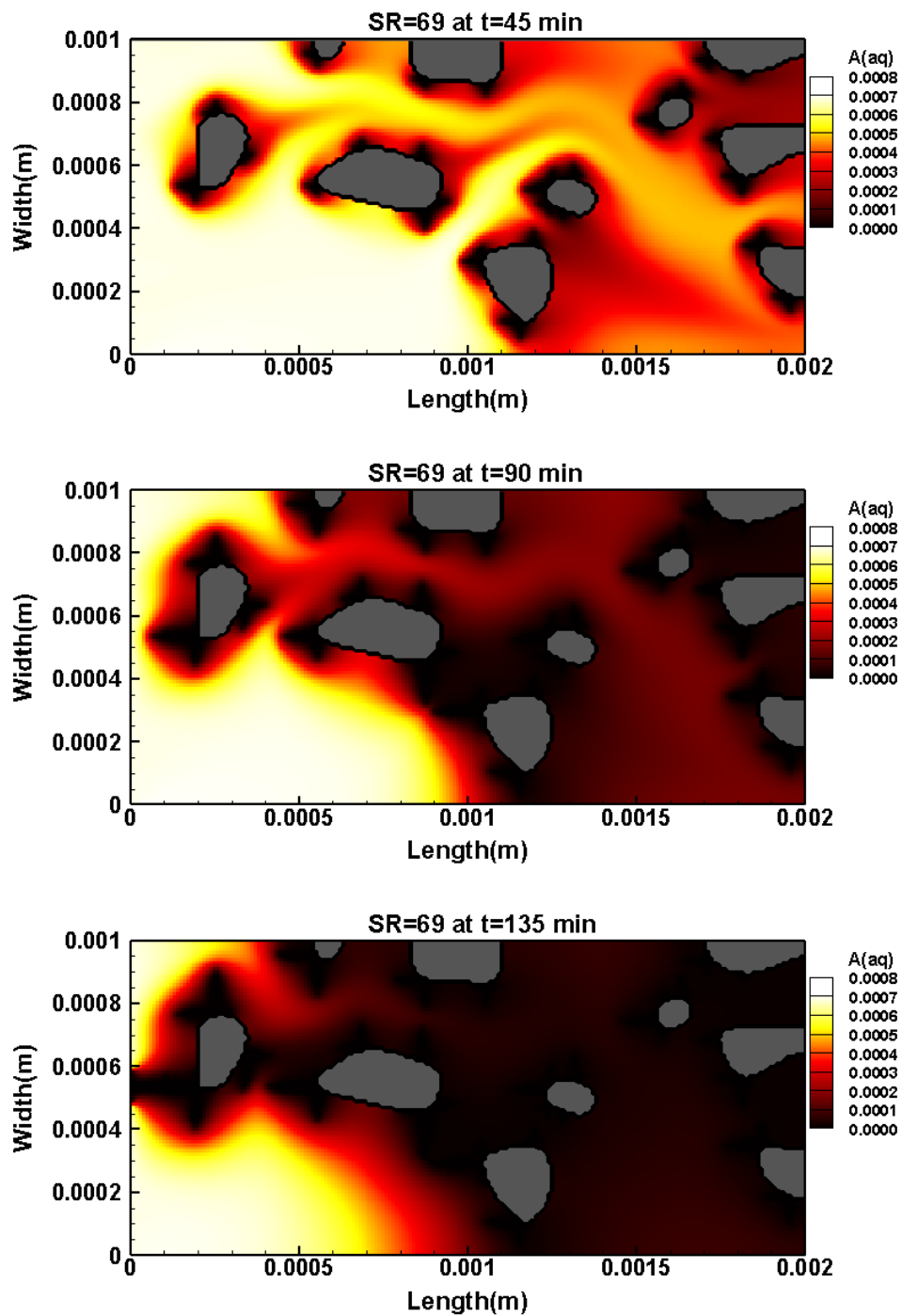


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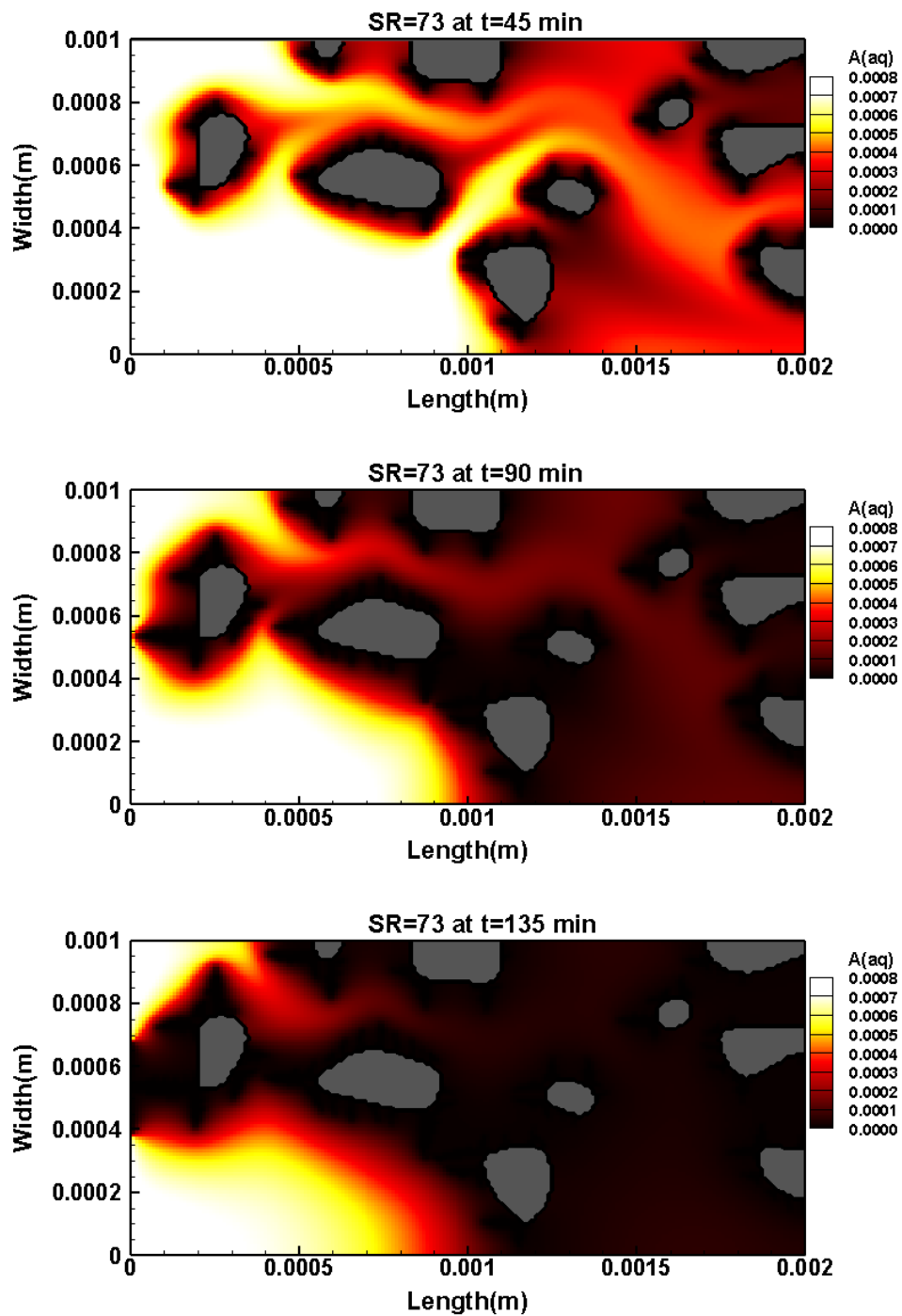


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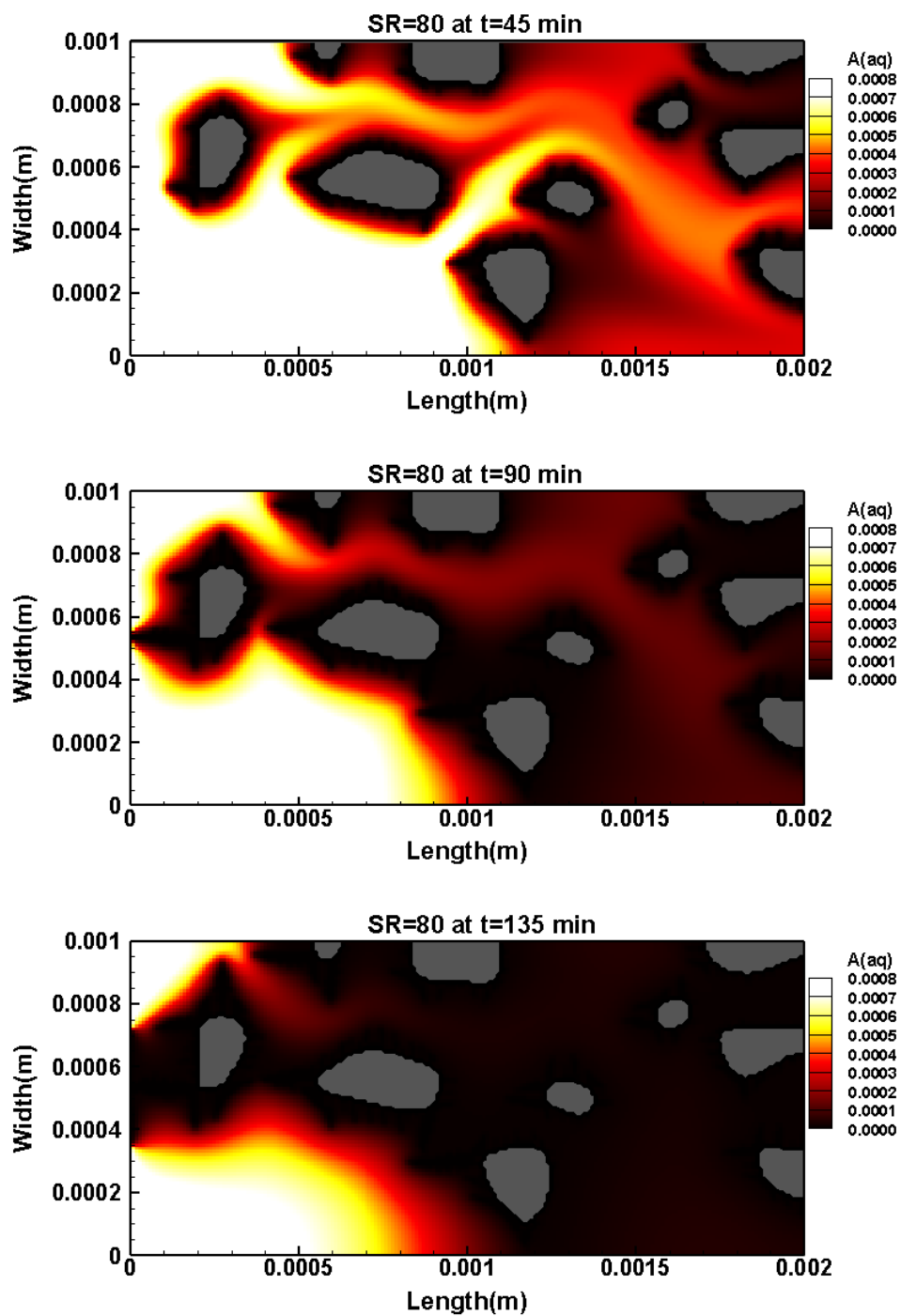


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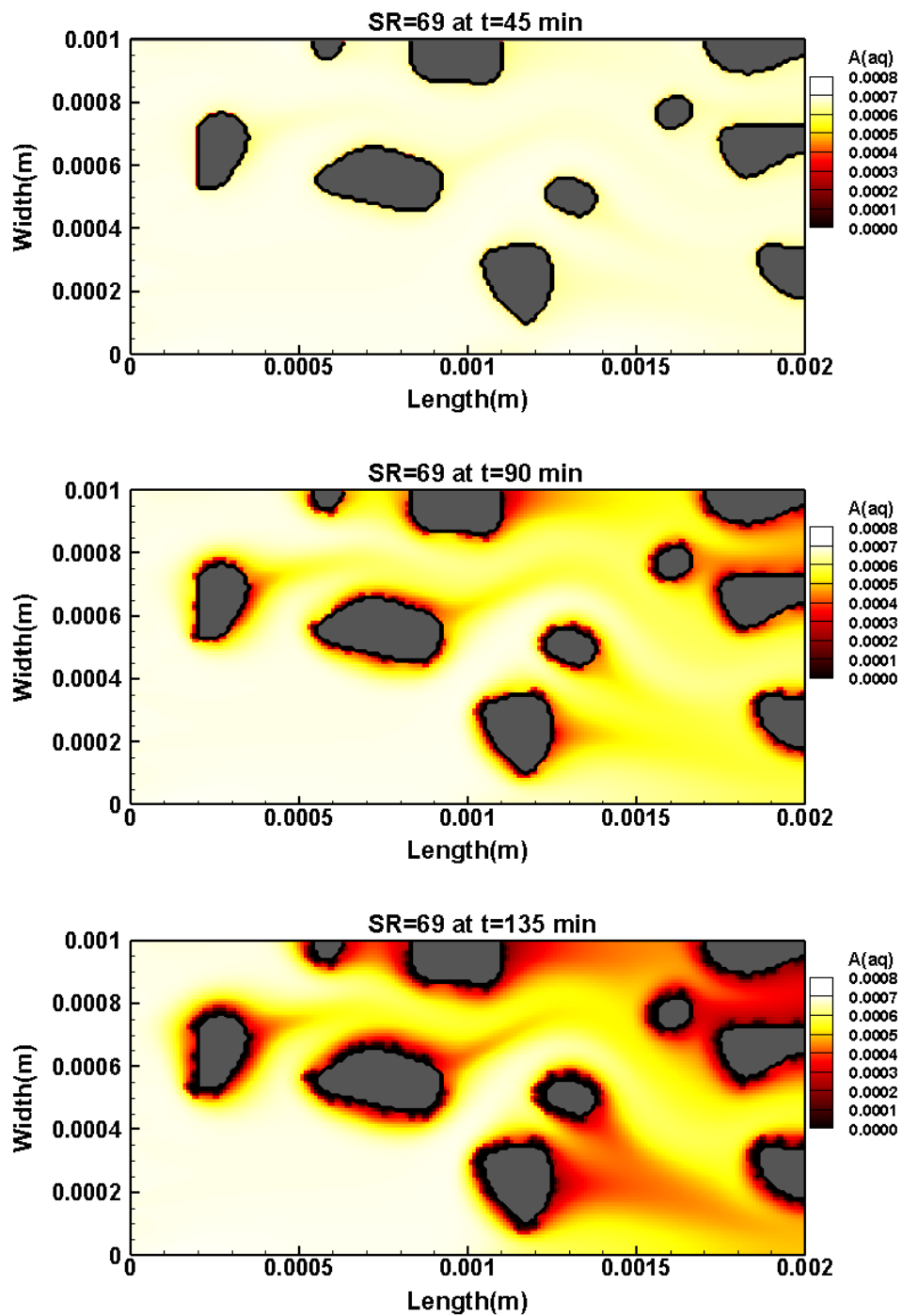
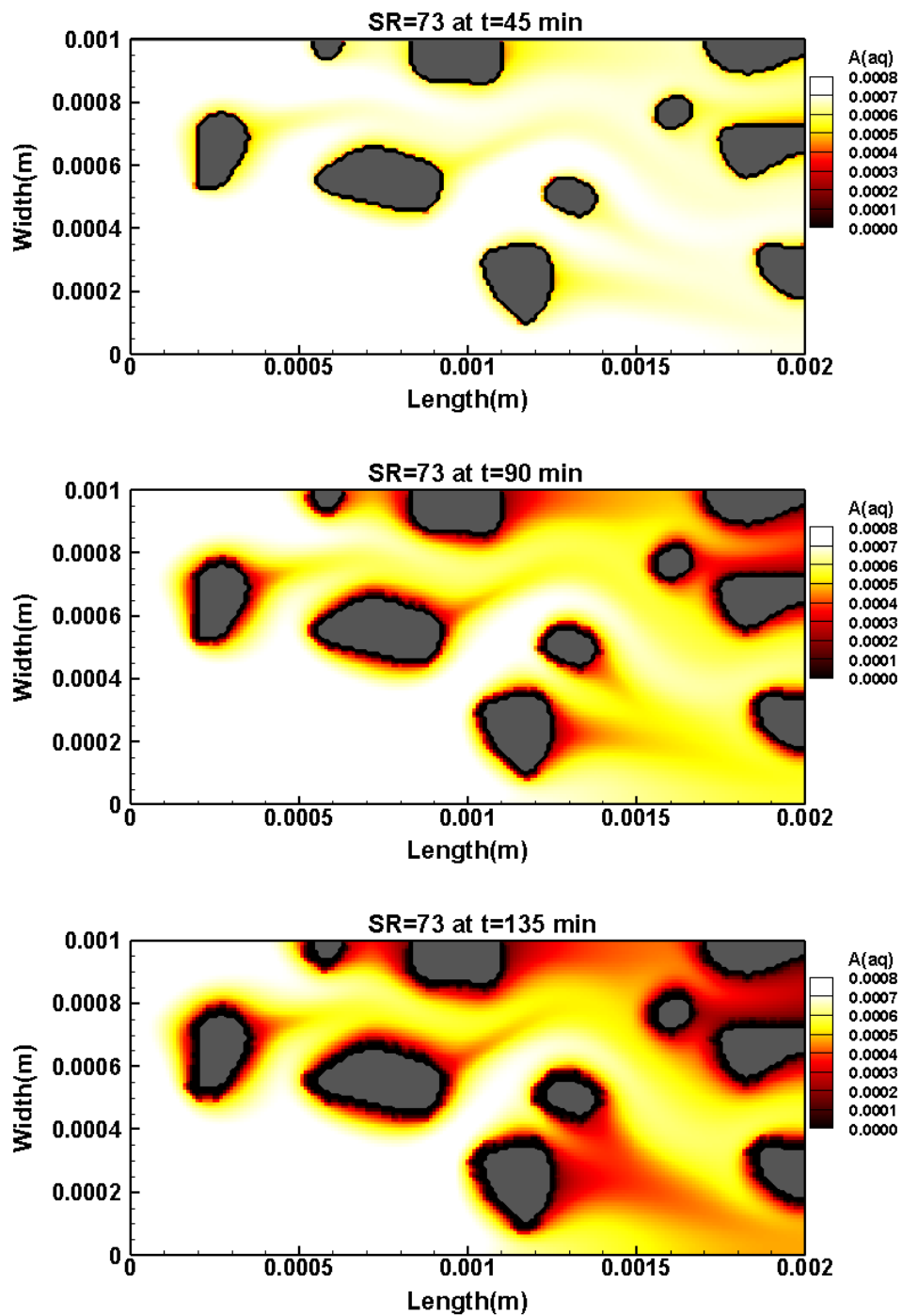


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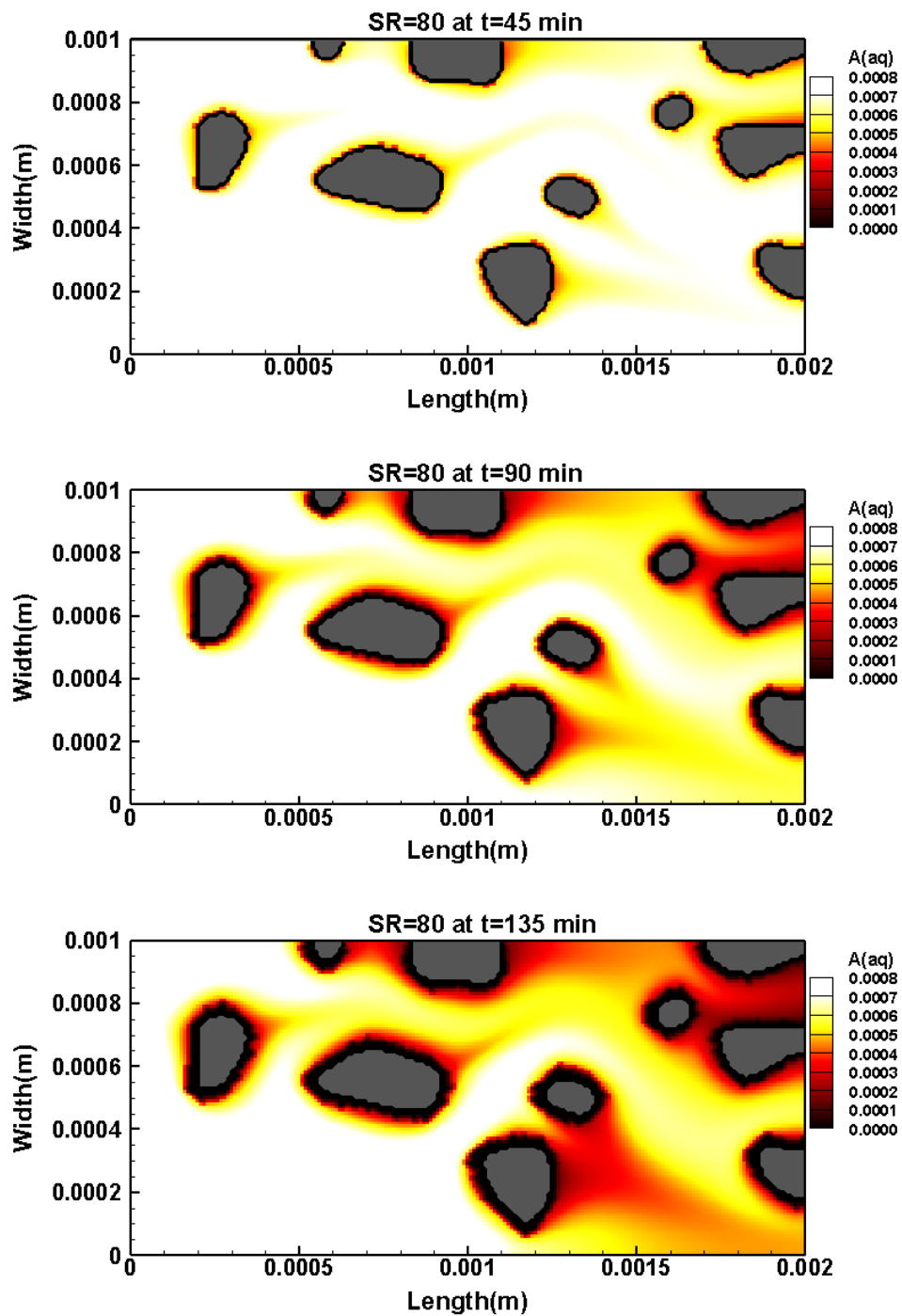
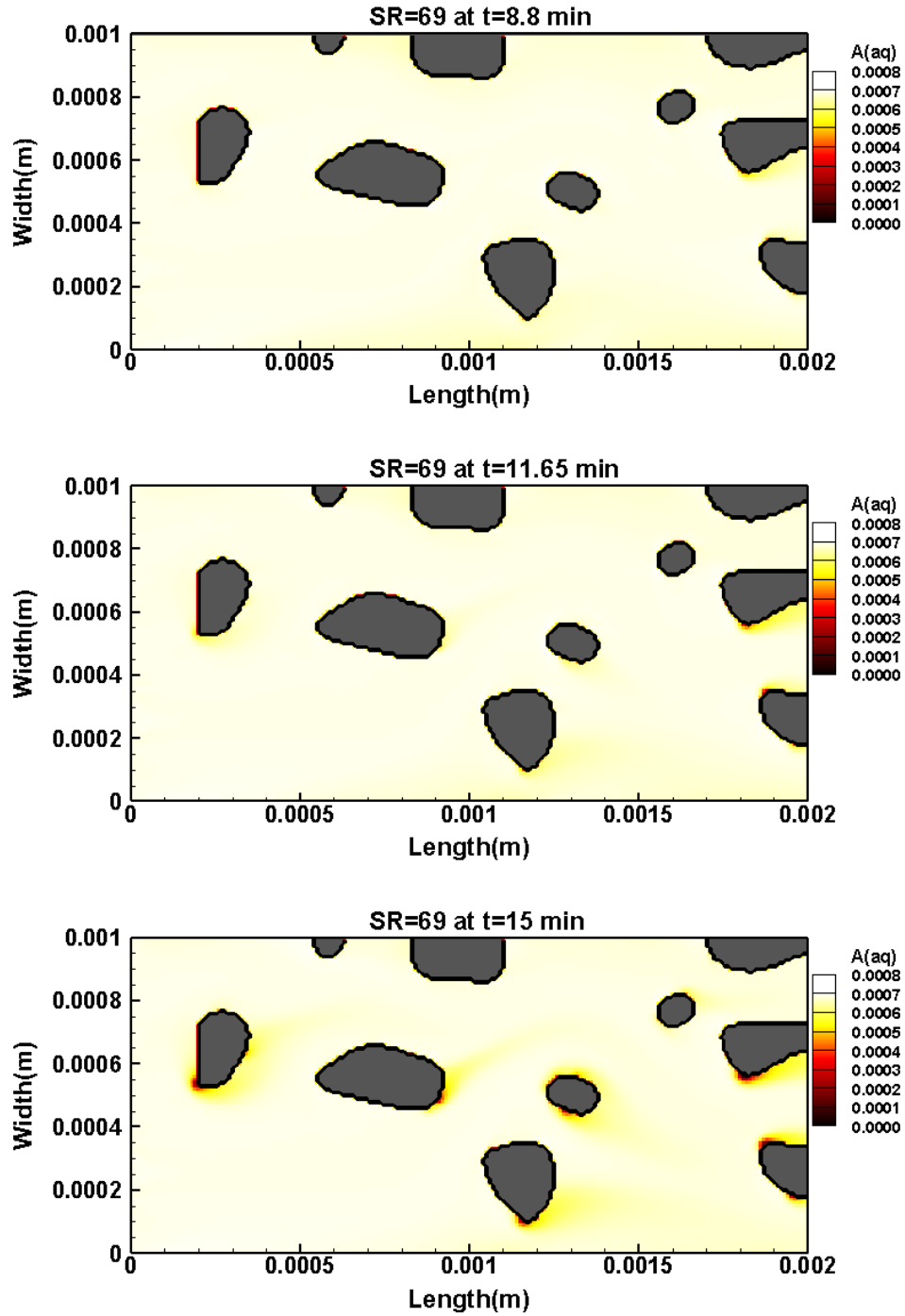


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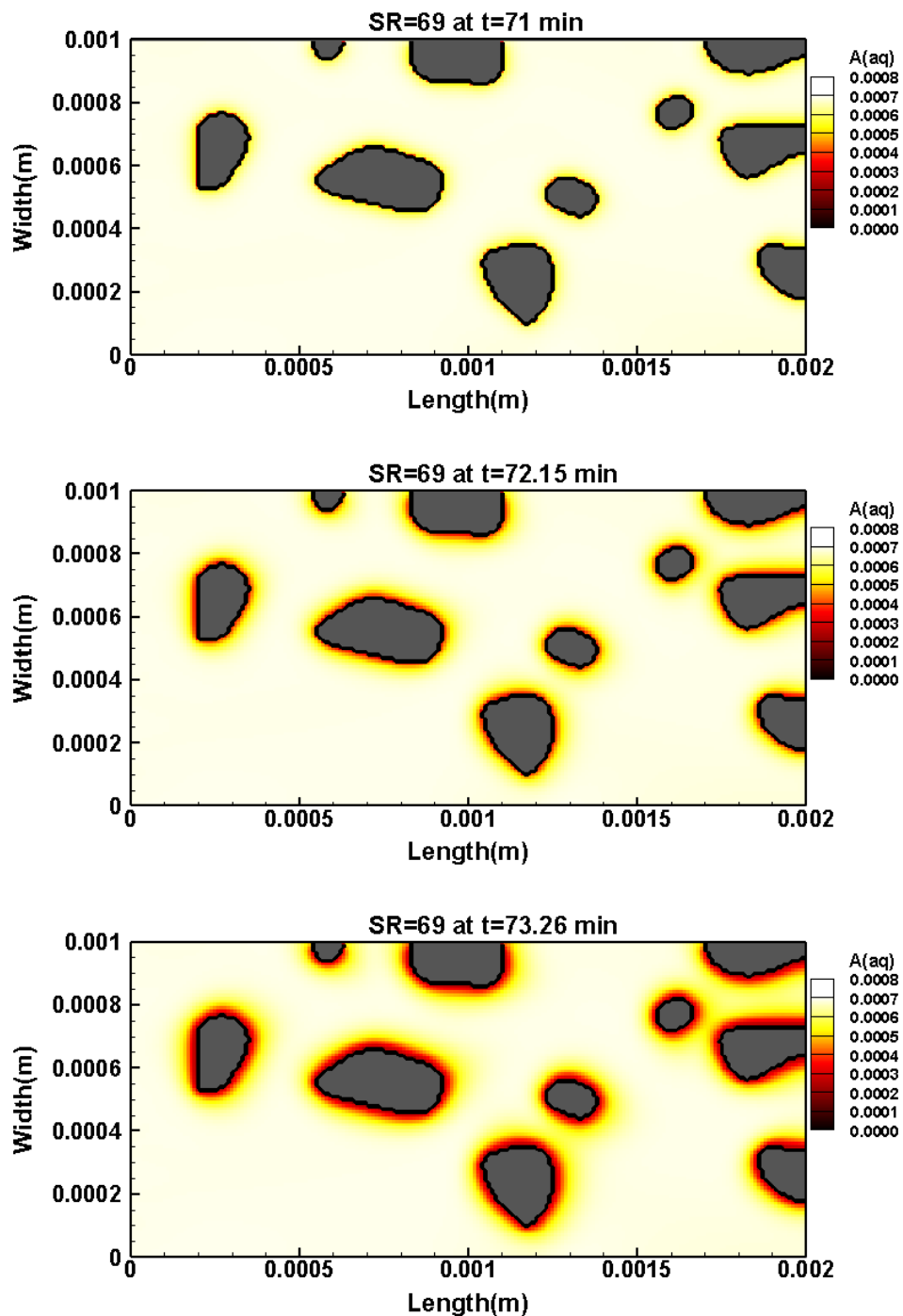


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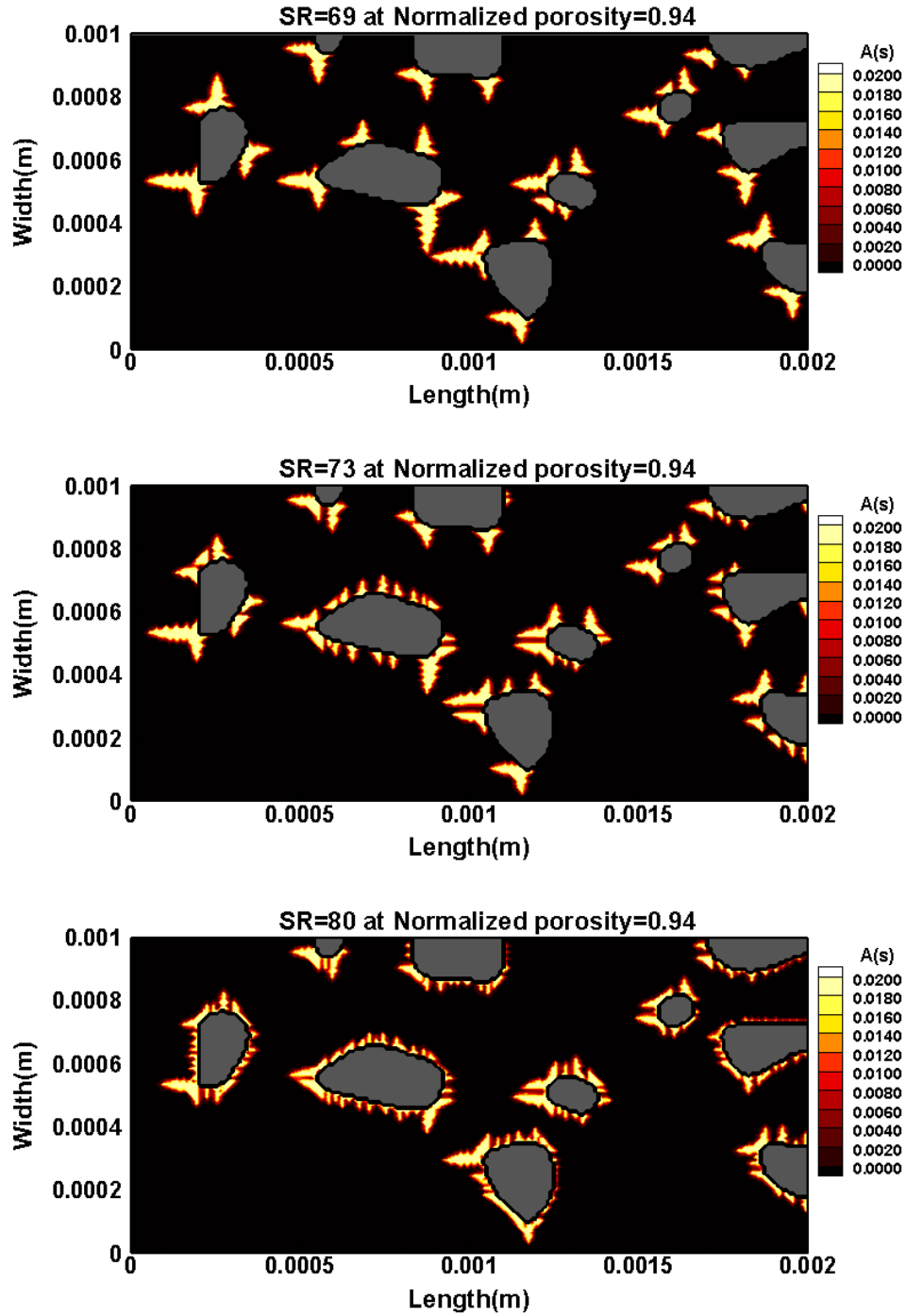
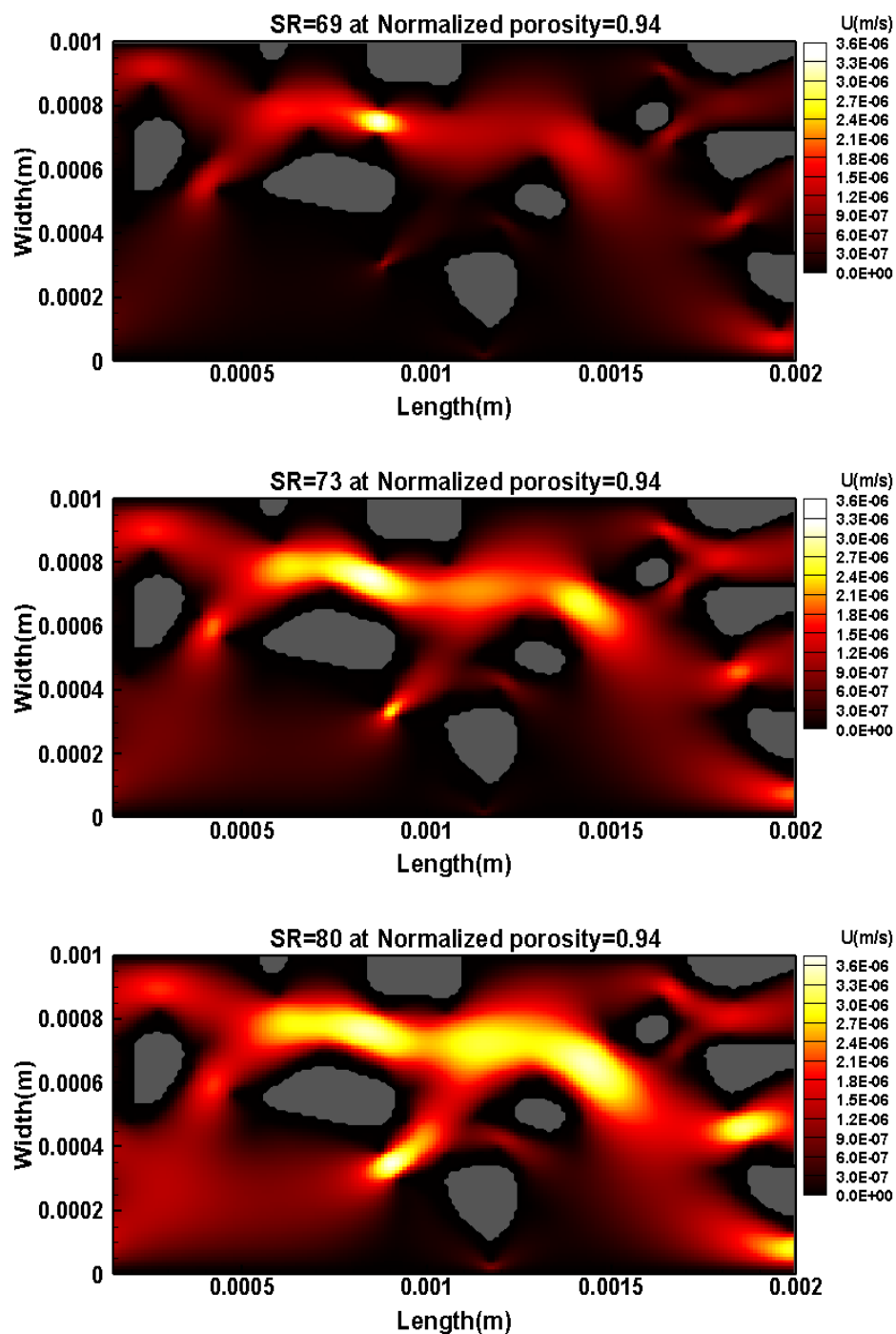
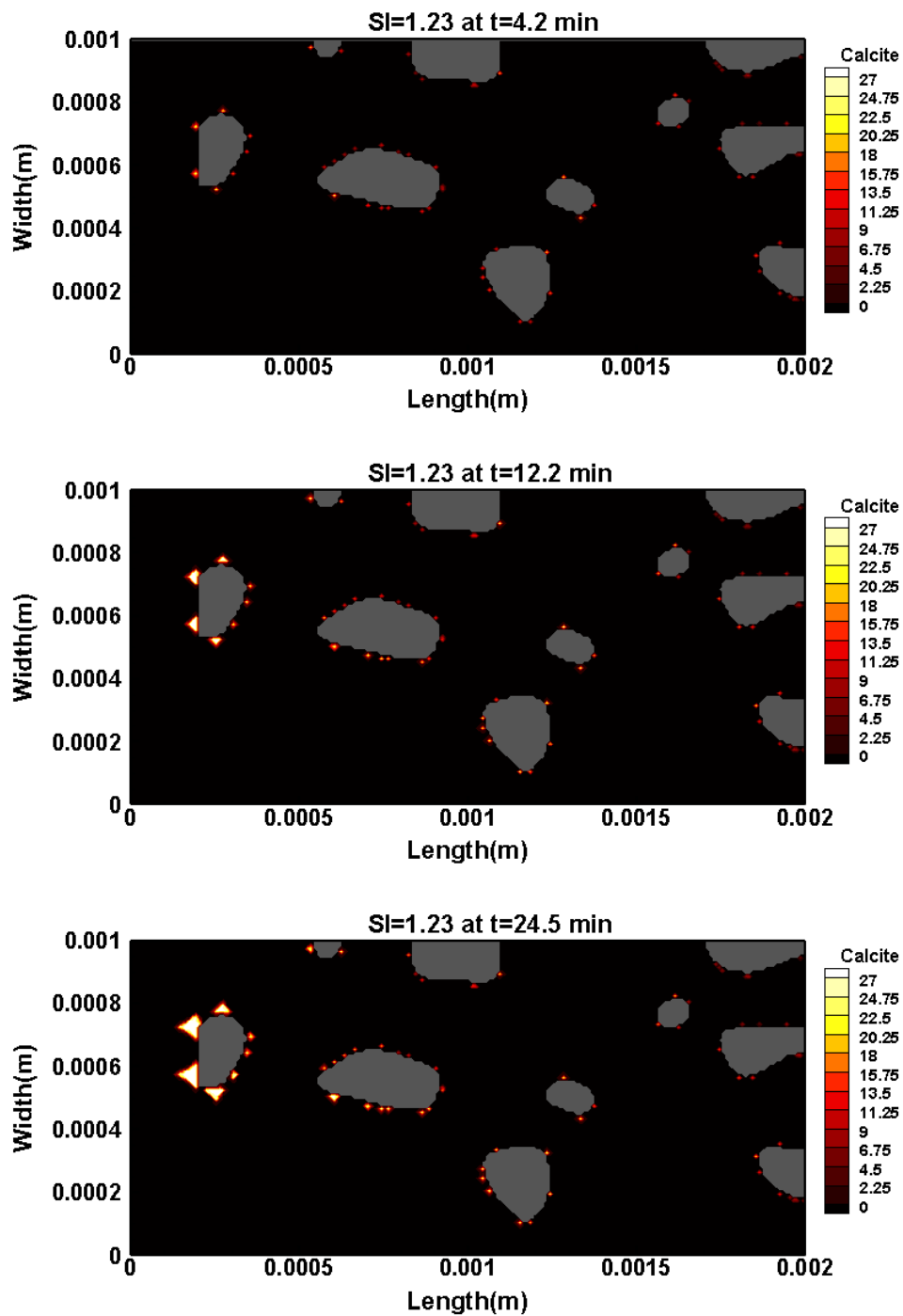


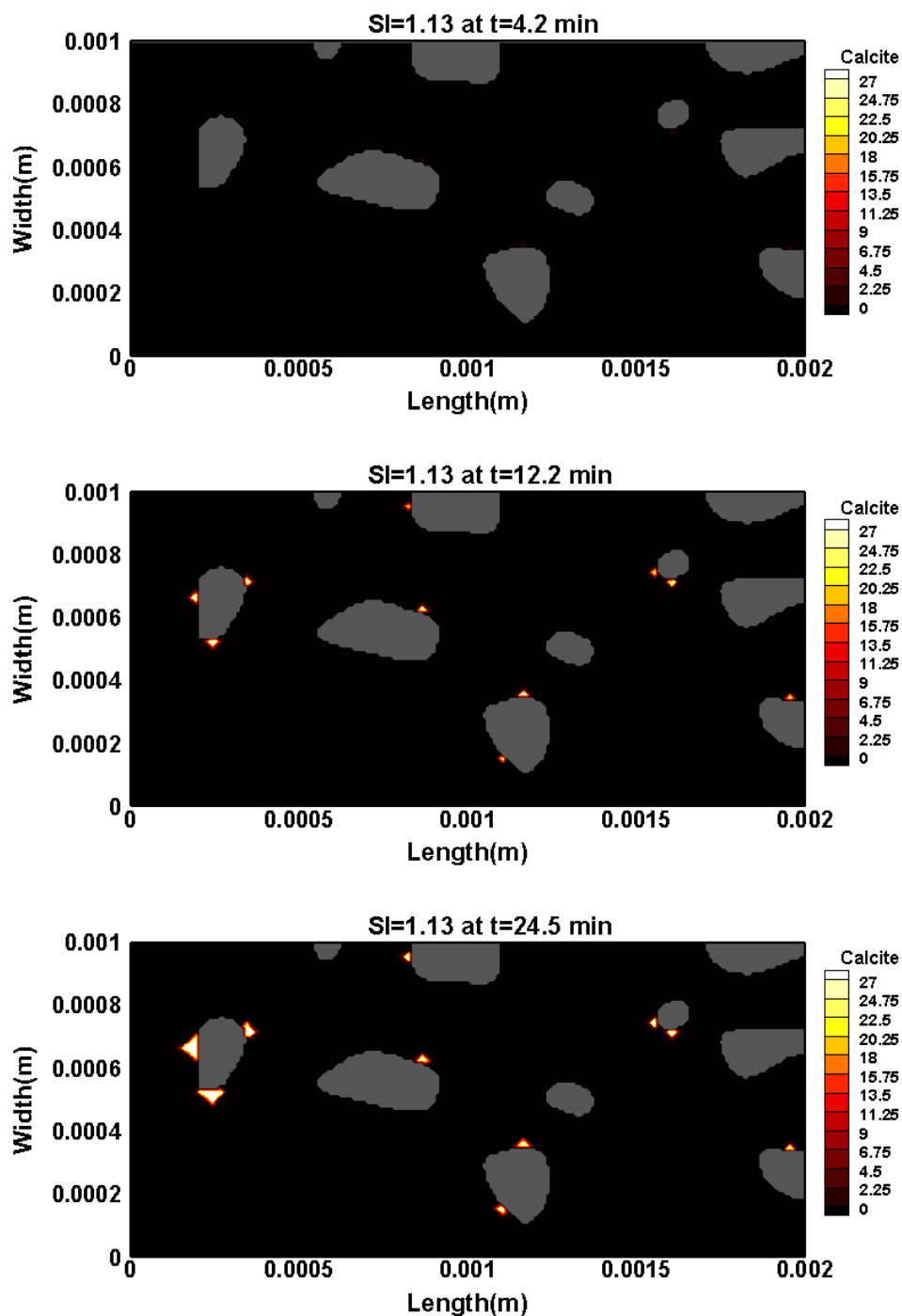
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**Figure S22.** The velocity profile for  $\Omega = 69, 73$ , and  $80$  when they all have the same normalized porosity =  $0.94$ . The kinetic rate constant for this case is  $5 \times 10^{-5} \text{ [mol.m}^{-2}.\text{s}^{-1}]$ . The initial average flow velocity is  $2.3 \times 10^{-6} \text{ [m.s}^{-1}]$  for this scenario.



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